



Mindfulness

Annotated Bibliography

Publications Spanning 2020 - 2024



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Mindfulness Literature Review

Annotated Bibliography

A

1. Abdullah, K. L., Phang, C. K., Che Amat, N. A., & Wiedemar, E. (2019). **Mindfulness-based stress reduction for psychological distress among nurses: A systematic review.** *Journal of Clinical Nursing*, 28(21-22), 3747-3758. <https://doi.org/10.1111/jocn.14987>.

Abdullah et al. (2019) compare the effectiveness of Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy in reducing recurrent depression in nurses. They reviewed nine studies, each of which showed a positive outcome in depression, burnout, mindfulness, compassion fatigue, serenity, and quality of life immediately following the intervention. The study found a significant impact when using programs of shorter duration and speculated that shorter programming may allow nurses to fit MBSR and MBCT programs into their busy work schedules.

This study focused specifically on MBSR programs developed by Dr. Jon Kabat-Zinn, making this study unique in focus. The authors also noted that several of the studies included did not report their dropout rate, which may have impacted the validity of their findings. This study provides insight into coping with burnout, reducing recurrent depression, and improving quality of life in high-stakes and demanding professions.

2. Al Daken, L. I., & Ahmad, M. M. (2018). **The implementation of mindfulness-based interventions and educational interventions to support family caregivers of patients with cancer: A systematic review.** *Perspectives in Psychiatric Care*, 54(3), 441-452. <https://doi.org/10.1111>

Al Daken et al. (2018) explore the impact of Mindfulness-Based Interventions (MBIs) and Educational Interventions (EIs) for family caregivers (FCs) of cancer patients. MBIs included Mindfulness-Based Stress Reduction (MBSR), Mindfulness-Based Cognitive Therapy (MBCT), and Mindfulness-Based Cancer Recovery (MBCR). EIs are also offered by healthcare professionals to FCs to provide coping skills, educational information, and self-efficacy. AlDeken et al. concluded that caregiving negatively impacts the mental, physical, and emotional well-being of FCs of patients with cancer and that, over time, this decrease in quality of life may become its own burden. The authors believe that both MBIs and EIs may increase positive outcomes for FCs and encourage future researchers to confirm their findings.

This paper highlights the impact of external stressors on mental health outcomes by focusing on the cumulative burden experienced by family caregivers of cancer patients. The authors reviewed 127 articles, which drew the general conclusion that both MBIs and EIs have the potential to reduce burden and improve mental health outcomes in FCs. This could potentially point to a more integrative approach to family-centred healthcare where the needs of both caregivers and patients are considered within treatment planning involving access to MBI programming.

3. Anger, A. B., Joy, P. C., & Smith, L. M. (2024). Addressing Health Care Workers' Mental Health: A Systematic Review of Evidence-Based Interventions. *Journal of Occupational Health Psychology*, 29(1), 10-28.
<https://doi.org/10.1037/ocp0000276>

Anger et al. (2024) propose that evidence-based mindfulness-based interventions (MBIs) significantly improve the mental health outcomes of healthcare workers. This review included 122 publications related to mental health and well-being in healthcare workers, exploring themes such as depression, anxiety, psychological strain, burnout, compassion fatigue, etc. While these experiences pose a heavy potential burden on healthcare workers, the authors suggest program designs that are both well-targeted

and well-designed may significantly improve mental health outcomes for healthcare workers.

While the authors included over 100 studies in their review, they acknowledge that their research did not include publications after March 2022, which may have excluded papers on healthcare workers related to the COVID-19 pandemic. They also highlight that many available studies suffer from small sample sizes, which makes it difficult to draw meaningful conclusions about the true impact of MBIs on mental health outcomes. This is an interesting theme to explore throughout my mindfulness literature review as we build an “evidence-based” knowledge base on the impact of mindfulness on mental health outcomes.

4. Anheyer, C., Cramer, H., Lauche, S., Saha, C., & Dobos, G. (2018).

**Mindfulness-based stress reduction for treating chronic headache: A systematic review and meta-analysis. *Cephalalgia*, 38(4), 301-312.
<https://doi.org/10.1177/0333102416684527>.**

Anheyer et al. (2018) assess the efficacy and safety of using Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) to reduce pain in patients with chronic headaches. The review includes five randomized control trials that compared MBSR, MBCT, and treatment as usual in the hope of finding a tool to reduce symptoms. However, they observed that neither intervention statistically reduced the frequency, duration, or pain intensity of the headaches. The authors acknowledged that due to the smaller scale of the studies they reviewed, there is a high risk of data bias and that more extensive randomized controlled trials are needed to draw meaningful conclusions.

This paper presents another interesting view of the practical applications of mindfulness-based interventions (MBIs). While it may feel counterintuitive to publish papers showing a low or null effect from an MBI treatment protocol, it is essential to

acknowledge the limitations of the tools we have available so we can apply them safely where they are helpful and communicate to specific populations that while MBIs have many practical uses, they are not currently an evidence-based tool for managing chronic headaches and migraines.

5. Auty, K. M., Cope, A., & Liebling, A. (2017). A systematic review and meta-analysis of yoga and mindfulness meditation in prison: Effects on psychological well-being and behavioural functioning. *Aggression and Violent Behavior*, 33, 30-43. <https://doi.org/10.1016/j.avb.2016.12.002>.

Auty et al. (2017) evaluate the use of mindfulness-based meditation and yoga practice on the mental health and behaviour of people who are in prison. The authors attempt to build on previous works that have explored the impact of mindfulness-based meditation and yoga practice on substance use in prison by comparing the effects of both programs in longer duration and frequency as well as intensive programs of short duration. In this iteration, the authors suggest that while in prison, individuals have unstructured time to reflect on their lives and that having access to programs such as yoga and mindfulness may guide periods of self-reflection toward a positive future outcome. The authors found evidence that programs with a longer duration produced more pronounced effects on psychological well-being and behaviour outcomes, while more intense programs showed no significant change. They suggest that this confirms actual changes in wellbeing and behaviour occur over time.

While including studies on individuals in prison in this paper may not be immediately apparent, it is essential to acknowledge that climate change will not impact all communities equally. The study of how to increase psychological well-being, adequately address mental health issues, and regulate anti-social behaviours is imminently vital to BIPOC populations, who make up the majority of people in corrections facilities. By providing these tools openly, there is potential to reduce recidivism, which in turn may increase the economic power of BIPOC families, strengthen BIPOC communities, and

ensure BIPOC citizens have a representative seat at the table when it comes to the legal, political, and sustainability conversations that impact their communities.

B

6. Bartlett, L., Martin, A., Neil, A. L., Memish, K., Otahal, P., Kilpatrick, M., & Sanderson, K. (2019). A systematic review and meta-analysis of workplace mindfulness training randomized controlled trials. *Journal of Occupational Health Psychology*, 24(1), 108-126. <https://doi.org/10.1037/ocp0000146>.

Bartlett et al. (2018) synthesize 23 studies on workplace-based mindfulness training. The authors emphasize that employee mental health and well-being directly relate to the staffing and profitability of their employers. They suggest that workplace stress correlates with employees' perception that their work demands outstrip their personal resources, which the authors refer to as an "effort-reward imbalance." The authors suggest that mindfulness may be a "protective resource" for high-demand professions, including nursing, and they consider it a preventative and coping mechanism. The results of their analysis showed a significant positive effect in the areas of perceived stress, psychological distress, anxiety, well-being and sleep. But limited impact on work performance, depression, or burnout. They also found that the impact of mindfulness or yoga-based programs was not dependent on the characteristics of the workplace itself.

This article articulates recurring limitations within mindfulness-based studies in the workplace, including lack of baseline measurements, inconsistent measurement tools, limited follow-up assessments, direct or conceptual replication, and exploration of professions outside education and health organizations. This shines a much-needed spotlight on patterns of research in mindfulness, which focus on specific populations and environments without structures in place to increase the external validity of study findings, leaving other populations unaddressed and unsure if mindfulness-based interventions will work for them.

7. Bawa, F. L., Mercer, S. W., Atherton, R. J., Clague, F., Keen, A., Scott, N. W., & Bond, C. M. (2015). Does mindfulness improve outcomes in patients with chronic pain? Systematic review and meta-analysis. *British Journal of General Practice*, 65(635), e387-400. <https://doi.org/10.3399/bjgp15X685297>.

While previous studies have focused on specific aspects of chronic pain, such as pain in patients with fibromyalgia, the authors opted to review 11 randomized control trials focusing on the human experience of acceptance of chronic pain and the perception of pain control. The authors compared the effects of 8-week mindfulness-based interventions to an active and inactive control group. They concluded that there was minimal evidence to support the use of mindfulness-based interventions for people with chronic pain. However, upon a meta-analysis of all of the included studies, it was found that mindfulness-based interventions have a positive effect on perceived pain control, but there was no statistical effect on pain intensity or depression.

This study wisely addresses the importance of choosing appropriate outcomes when assessing possible interventions for populations. The authors suggest approaching new areas of mindfulness research with an initial focus on humanistic outcomes (such as perception of pain control) and engaging with populations of interest to develop an understanding of the goals and needs of that community. The author's call for community engagement before research is especially poignant in communities such as the chronic pain community, as members may provide significant insight into what outcomes would be most impactful for them if they can be validated.

8. Baydoun, M., Moran, C., McLennan, A., Piedalue, K. A. L., Oberoi, D., & Carlson, L. E. (2021). Mindfulness-based interventions in cancer survivors: a systematic review of participants' adherence to home practice. *Patient preference and adherence*, 1225-1242. <https://doi.org/10.2147/PPA.S267064>

Baydoun et al. (2021) investigate the adherence rates for cancer survivors practising at-home mindfulness-based interventions (MBIs). The authors reviewed 21 studies focused on formal (meditation, body scan, yoga) and informal (mindful daily activities) at-home mindfulness practice. They found mixed results regarding the relationship between home practice and psychological distress outcomes, with four studies reporting moderate-to-large negative correlations between home practice, time, and measures of mood, anxiety, perceived stress, and fear of cancer recurrence. The authors highlight the need for standardized measures for at-home practice to improve between-study comparisons and suggest incorporating data collection and diary features directly into the smartphone apps delivering the intervention, which may increase both adherence and data collection from participants.

While the authors acknowledge the therapeutic benefits of MBIs for cancer survivors, the relationship between home practice and psychological outcomes continues to be mixed. Additionally, the authors call for future researchers to explore demographic, personality, and medical characteristics to help identify individuals typically at risk of nonadherence, as these characteristics may indicate additional support is needed for adequate compliance with the protocol.

9. Brown, A. N., White, D. R., & Green, C. S. (2023). The impact of neurological disability and sensory loss on mindfulness practice. *Mindfulness and Disability Studies*, 9(2), 212-228. <https://doi.org/10.1038/s41598-022-24256-9>.

Brown et al. (2023) investigate the application of mindfulness-based practices such as body scans for individuals with sensory loss or absence in patients with Spinal Cord Injury (SCI), Multiple Sclerosis (MS), and Functional Neurological Disorder (FND). Eight mindfulness teachers with neurological disabilities and sensory loss were recruited as key informants and interviewed, revealing two major themes for adapting mindfulness practices. 1) “Adopting your body” - This process includes employing body acceptance, working through a period of crisis, and grieving a different reality, which is described as

body resistance, which is described as “resistance.” 2) “Sensation without loss” - this process involves creating adaptations for the body, primarily through body scanning and visualization. The authors conclude that there are opportunities to adapt mindfulness practices to include populations with neurological disabilities and sensory loss by exploring the experience and absence of sensation in the body.

This narrative review pushes the boundaries of what it means to practice mindfulness. By consulting directly with community members about how mindfulness tools such as body scans can be adapted to differently-abled bodies, there is significant potential for future research on the effectiveness of adapted mindful practices vs. traditional mindfulness practices in areas such as mental health, quality of life and wellbeing, and health management.

10. Borquist-Conlon, D. S., Maynard, B. R., Brendel, K. E., & Farina, A. S. (2019). Mindfulness-based interventions for youth with anxiety: A systematic review and meta-analysis. *Research on Social Work Practice*, 29(2), 195-205. <https://doi.org/10.1177/1049731516684961>

Borquist-Conlon et al. (2019) synthesize the effects of mindfulness-based interventions (MBIs) on anxiety in young adults. The authors reviewed five studies observing youth ages 5 to 18 with diagnosed anxiety disorders. Their meta-analysis showed a moderate, significant effect on reducing anxiety. However, the authors identified the heterogeneity and small sample sizes of the selected studies as a notable limitation of their analysis.

This is the first paper reviewed to note that many individual studies showing no effect were underpowered, which only became evident once their datasets were pooled. The authors called for more robust, standardized methodologies in MBI research for youth to enhance the power of future meta-analyses. The authors emphasize that standardization is essential to ensure future interventions in this population are practical and comparable.

- 11. Burton, A., Burgess, C., Dean, S., Koutsopoulou, G. Z., & Hugh-Jones, S. (2016). How effective are mindfulness-based interventions for reducing stress among healthcare professionals? A systematic review and meta-analysis. *Stress and Health*, 32(5), 401-410. <https://doi.org/10.1002/smi.2673>.**

Burton et al. (2016) assessed the effectiveness of mindfulness-based interventions (MBIs) in reducing stress in healthcare workers. The authors emphasize that work-related stress and long working hours are a critical concern among healthcare professionals in the UK, as this working environment directly impacts health markers such as sleep, interpersonal relationships, and mental and physical health. Burton et al. suggest that MBIs moderately reduce stress levels and make moderate improvements to mental health and well-being in healthcare professionals. The authors suggest replication and follow-up studies to confirm their results.

This study reviewed nine papers and focused strictly on stress experienced by healthcare workers. While the findings in this study are similar to others in this time period, the authors highlight the global importance of supporting healthcare workers. This includes a potential increase in patient satisfaction, improved quality of care, and higher levels of compassion from physicians. The authors also emphasize that improvements after an MBI may be biased if studies showing no significant change aren't published for statistical comparison. This is the first article identified in this search that acknowledges this publishing bias.

C

- 12. Cao, S., Geok, S. K., Roslan, S., Qian, S., Sun, H., Lam, S. K., & Liu, J. (2022). Mindfulness-Based Interventions for the Recovery of Mental Fatigue: A Systematic Review. *International Journal of Environmental Research and Public Health*, 19(13), 7825. <https://doi.org/10.3390/ijerph19137825>.**

Cao et al. (2022) examine the application of mindfulness-based interventions (MBIs) in populations experiencing the psychological state of mental fatigue (MF). The authors draw attention to the adverse mental impact of the COVID-19 pandemic as well as cognitively demanding jobs such as working in the healthcare profession. The authors argue that there are significant adverse effects correlated with MF, including low levels of self-control, which is particularly problematic around substances and other addictive and maladaptive behaviours. The authors conclude that MBIs had a positive effect on psychological performance on attention, aggression, and mind-wandering.

This review is the first one surveyed that critiques anecdotal evidence that men improve more in emotion regulation than women after MBIs. The authors mention that several studies in their review explicitly state the gender distribution of their sample, but none statistically controlled for variability in gender on the effectiveness of the interventions tested. This presents another opportunity to elevate future research projects to maximize the impact of mindfulness tools as they are implemented in communities.

13. Carrière, K., Khoury, B., Gunak, M. M., & Knäuper, B. (2018).

Mindfulness-based interventions for weight loss: A systematic review and meta-analysis. *Obesity Reviews*, 19(2), 164-177.

<https://doi.org/10.1111/obr.12623>.

Carrière et al. (2017) attempt to clarify inconsistencies in reporting from studies exploring the effectiveness of Mindfulness-Based Interventions (MBIs) in promoting eating behaviours and weight loss. The author's analysis revealed that MBIs may be associated with significant positive weight changes, reduced food cravings, and increased positive eating behaviours.

Weight management is a critical health issue in the Western world, and mindfulness may be a low-cost intervention if the results of this study are found to be generalizable

to a variety of populations experiencing weight management issues. Like many studies examined in this literature review, the authors call for future research to investigate the long-term effect of MBIs on weight management and positive eating behaviours to assess the longevity of MBI results in these populations.

14. Chiodelli, R., Mello, L.T.N., Jesus, S.N., Beneton, E.R., Russel, T. & Andretta, I. (2022). Mindfulness-based interventions in undergraduate students: A systematic review. In *Journal of American College Health: J of ACH* (Vol. 70, Issue 3, pp. 791–800). <https://doi.org/10.1080/07448481.2020.1767109>.

Chiodelli et al. (2022) state that the Institute for Public Policy in the UK reported a five-time increase in mental health issues reported to the university over the last ten years (2012 - 2022). Depression and anxiety are the most commonly reported mental health concerns, with the number of students reporting depression doubling and the number of suicidal students tripling over the last decade. This study aimed to review how MBIs are implemented within university settings. A total of 19 papers were included in the review, confirming a rise in mental health concerns among university-aged students, particularly in the rating of distress (83% of students reported being moderately to severely stressed).

The authors confirmed their hypothesis that MBIs effected a significant change in psychological distress. While they acknowledge that the standardized 8-week MBSR program has the most empirical research, the authors found that abbreviated MBI sessions may make MBI programming more accessible to students. This suggestion is aligned with previous recommendations for populations like nurses who are coping with high-demand situations. The idea of adapting the delivery of MBIs to meet populations where they are may increase the accessibility of MBIs for populations who cannot commit mentally or physically to the demands of a standard MBSR program as their primary intervention. This concept mirrors the concepts used in dialectical behaviour

therapy (DBT), which focuses on accepting where we are while building skills to change our situation over time.

15. Chen, B., Yang, T., Xiao, L., Xu, C., & Zhu, C. (2023). Effects of mobile mindfulness meditation on the mental health of university students: Systematic review and meta-analysis. *Journal of Medical Internet Research*, 25, e39128. <https://doi.org/10.2196/39128>.

Chen et al. investigate the effectiveness of mobile mindfulness meditation (MMM) on university students experiencing stress, anxiety, depression, mindfulness, and well-being. The authors reviewed ten studies and concluded that MMMs were likely an impactful way to increase the well-being and mindfulness of university students. The authors describe the current state of student mental health as an “urgent social problem” that needs to be investigated and solved.

Like previous studies, the authors highlight the significant time investment required for typical 8-week mindfulness-based stress reduction (MBSR) programs, which may present a barrier to student participation in standard programming. When the authors compared traditional face-to-face mindfulness facilitation to app-based facilitation, they determined that app-based MBIs are more economically, logistically, and practically feasible for many students. However, this study requires replication before any conclusions can be drawn.

16. Chen, K. S., Boucher, L. C., & Howell, D. A. (2012). Meditative Therapies for Reducing Anxiety: A Systematic Review and Meta-Analysis. *Depression and Anxiety*, 29(7), 593-604. <https://doi.org/10.1002/da.21992>.

Chen et al. (2012) attempted to quantify the effectiveness of meditative therapies in reducing anxiety. The authors reviewed 22 studies but did note that many studies listed reduction in anxiety symptoms as a secondary concern of their research. After

performing a meta-analysis of the data, the authors concluded that there were small to medium effects, which points to potential clinical relevance when compared to wait-list controls or treatment as usual. However, they noted that meditation alone was not as effective as alternative treatment methods.

This study is now dated as several additional meta-analyses and systematic reviews have been completed focusing on mindfulness-based interventions (MBIs) for anxiety, specifically. However, it is still relevant to the discussion around how study designs in the mindfulness meditation space and our general knowledge about the benefits and risks of MBIs have evolved, so this information may be included in the appended table describing the historical development of mindfulness research.

17. Chi, X., Bo, A., Liu, T., Zhang, P., & Chi, I. (2018). Effects of mindfulness-based stress reduction on depression in adolescents and young adults: A systematic review and meta-analysis. *Frontiers in Psychology*, 9, 1034. <https://doi.org/10.3389/fpsyg.2018.01034>.

Chi et al. (2018) evaluate the effects of mindfulness-based stress reduction (MBSRs) on symptoms of depression in adolescents and young adults (aged 12 - 25 years old). The authors reviewed 18 studies employing either standard or adapted MBSRs and found a moderate reduction in depressive symptoms in post-test evaluations. These findings were aligned with previous systematic reviews on the implementation of MBSRs in young adults with depressive symptoms. The authors continue the trend of more recent knowledge synthesis projects by highlighting the lack of follow-up evaluations with participants and the risk of publication bias (where non-significant results are not published).

This review found that MBSRs had a greater effect size than no treatment or treatment as usual. Still, it was noted that this may have been due to active control conditions that limit the external validity of mindfulness-based interventions in these populations. Again,

this highlights a consistent theme in mindfulness-focused research where calls for future research emphasize the need for follow-up evaluations, larger samples, and potential calls for grey literature to unshelve research projects that are deemed unnecessary for publication due to insignificant findings but which may be deeply relevant to the populations proposed to benefit from mindfulness-based interventions, especially in cases where populations are prescribed mindfulness-based interventions instead of validated medical treatments.

18. Choo, C. C., Kuek, J. H. L., & Burton, A. A. D. (2018). Smartphone applications for mindfulness interventions with suicidality in Asian older adults: A literature review. *International Journal of Environmental Research and Public Health*, 15(12), 2810. <https://doi.org/10.3390/ijerph15122810>.

Choo et al. (2018) explore recent research on smartphone-based mindfulness-based interventions (MBIs) in older Asian adults. After a review of 10 studies, the authors concluded there is currently a lack of evidence supporting the efficacy of smartphone-delivered MBIs related to suicide prevention in this population and that the information that did show some potential was not generalizable to this population. The authors also raised several concerns regarding the applications reviewed, stating that out of several apps targeting individuals experiencing a suicidal crisis, few encouraged users to seek professional help, provided a theoretical explanation as to why mindfulness-based interventions may be effective in addressing suicidal ideation or mental health issues that may culminate in suicidal thoughts or behaviours, or provided screening tools to assess the suitability of their application for potential users. The authors suggest that these issues may be addressed by involving community-based clinicians and specialists in biomedical informatics in developing and testing these types of apps.

The authors do an excellent job mapping out specific and immediate concerns regarding developing online and smartphone-based MBIs. Due to the general

availability of mindfulness training, the accessibility of coding classes, and advancements in applications such as Open AI's Chatgpt, creating personalized applications has never been easier. This rightfully raises concerns regarding the safety of untrained community members taking on the role of protected professionals such as social workers, psychologists, and psychiatrists and delivering therapeutic protocols en masse without user screening, supervision, or access to professional help when needed. While the development of apps may increase the availability of evidence-based tools to rural, low-income, and isolated populations, the safety of community members must be placed first and foremost in the development process. **19. Christodoulou, G. N.,**

19. Antoniou, A., & Zannas, A. S. (2024). Psychological Interventions to Enhance Positive Outcomes in Adult Cancer Caregivers: A Systematic Review. *Journal of Psychosocial Oncology*, 42(1), 67-84.
<https://doi.org/10.1080/07347332.2024.1857430>.

Christodoulou et al. (2024) evaluate the impact of mindfulness-based interventions (MBIs) on family caregivers (FCs) of cancer patients. This review aligns with previous reviews indicating that MBIs may enhance positive outcomes for FCs in mental health and general well-being. Similar to other reviews focusing on FCs, a call is made for future research to include follow-up evaluations to determine the longevity of MBIs on wellbeing outcomes.

The authors highlight an important sub-population within the chronic illness community in those who care for or who are emotionally, psychologically, and physically impacted by the illness of a loved one. While aspects of cancer treatment and survival have been widely studied in the wellness space, shining a spotlight on the psychological and physical burnout associated with constant caregiving is an important avenue for future research, as the health of caregivers is directly related to the overall health outcomes of the people they care for. Additionally, understanding that the needs of caregivers may extend beyond the end of patient treatment (especially in terms of palliative care) may

warrant the inclusion of FC's health needs within patient treatment plans to maintain the health of the overall family unit.

- 20. Cillessen, L., Johannsen, M., Speckens, A. E. M., & Zachariae, R. (2019). Mindfulness-based interventions for psychological and physical health outcomes in cancer patients and survivors: A systematic review and meta-analysis of randomized controlled trials. *Psycho-Oncology*, 28(12), 2257-2269. <https://doi.org/10.1002/pon.5214>.**

Cillessen et al. (2019) evaluate the effectiveness of mindfulness-based interventions (MBIs) for reducing psychological distress and improving physical health outcomes in cancer patients and survivors. The authors analyzed 29 Randomized Control Trials (RCTs) to assess the impact of MBIs on anxiety, depression, fear of cancer recurrence, fatigue, sleep disturbances, and pain. After analysis, the authors concluded there was a small but significant improvement in psychological distress and secondary outcomes like anxiety and depression post-intervention. The authors noted a more significant effect size in younger patients, those with passive control conditions, and those following standard MBI manuals.

The authors determined that MBIs are effective in reducing psychological distress in cancer patients and survivors, though they clarify the effects identified are modest. Interestingly, the authors report that as of 2019, the National Comprehensive Cancer Network recommends that patient “distress” only be treated when the stress symptoms are considered significant. This is at odds with the authors' findings, who found that the intensity of psychological distress did not generate a more significant effect. However, the authors indicate this may result from self-selection bias for mindfulness-based studies. This is one of the first papers reviewed that has addressed self-selection bias as a limitation of MBI research and raises a poignant point about the generalizability of MBI research.

21. Cork, P. H., Elliott, L., & Trombley, A. (2023). Meditation for Anxiety: A Holistic Approach to Treatment. *Journal of Holistic Nursing*, 41(2), 135-147.
<https://doi.org/10.1177/08980101231217361>.

Cork et al. (2023) investigate the use of mindfulness-based interventions (MBIs) as a primary treatment for anxiety in university students (aged 19 - 22). The authors provide a robust discussion on the physiological effects of mindfulness meditation on the body and express their hope that providing a review detailing evidence-based support for MBIs as an effective treatment for anxiety in young adults will educate primary care providers (PCPs) on the benefits of mindfulness meditation on anxiety symptom reduction and equip them to discuss this treatment method with their patients. After reviewing a total of 15 articles, the authors posit that MBIs provide a cost-effective and accessible option for many young adults experiencing symptoms of anxiety.

This review includes an extensive discussion on how anxiety influences biological systems as well as the emotional distress caused by anxiety disorders and encourages PCPs to become familiar with MBI options available to their patients. While the authors emphasize the evidence supporting MBIs as a primary treatment option, they clearly and repeatedly acknowledge that anxiety interventions are not one-size-fits-all and that each patient should be evaluated individually to determine if an MBI would be suitable as a primary or adjunct treatment for anxiety. The authors also suggest that while some patients may require more immediate and invasive intervention to regain symptom stability and control, MBIs may also provide these patients with an avenue to dive deeper into their anxiety experience and develop a strong alliance with their bodies as part of a holistic treatment plan.

22. Corpuz, J. C. G. (2023). The importance of spiritual mindfulness in palliative care. *American Journal of Hospice & Palliative Medicine*, 40(4), 305-307.
<https://doi.org/10.1177/10499091231213628>.

Corpuz (2023) emphasizes the critical role of spiritual mindfulness in palliative care, underscoring a holistic care plan for end-of-life patients. The author discusses how integrating spiritual practices into palliative care treatment plans may enhance overall patient well-being, reduce existential distress, and provide emotional comfort. The author argues that spiritual mindfulness helps patients find meaning and acceptance in their situation, both essential components of person-focused palliative care. This approach not only supports individual patients but also helps caregivers and healthcare providers manage palliative care settings' emotional and psychological challenges.

The author's choice to highlight holistic care's impact on family and professional care providers is an interesting bridge between previous studies focusing on the well-being of family caregivers (FCs) and healthcare professionals such as nurses. This opens the possibility for future research on the impact of incorporating mindfulness practices, including spirituality on the healthcare ecosystem and how a healthy support and care network may benefit all involved in a devastating situation.

23. Covington, L., Banerjee, M., Pereira, A., & Price, M. (2022). Mindfulness-based interventions for professionals working in end-of-life care: A systematic review of the literature. *Journal of Palliative Care*, 38(2), 225-238.
<https://doi.org/10.1177/08258597221100330>.

Covington et al. (2022) assess the effectiveness of mindfulness-based interventions (MBIs) for professionals working in end-of-life care. The authors reviewed six studies exploring the effectiveness of MBIs in reducing burnout, stress, and emotional exhaustion in healthcare workers in palliative care settings. The authors indicate that MBIs may improve mental health and resilience in this population. However, they noted consistently small samples and a lack of control groups in the available studies, which may have introduced bias into their study. They also noted insufficient data to complete a meta-analysis, which they indicated was an area of potential future research.

Interestingly, the authors noted that the time commitment required to complete a standard MBI program and an individual's experience of negative thoughts and self-critique during mindfulness practices may present a barrier to participation for healthcare workers who are already overburdened. They suggest undertaking more extensive reviews of MBI programs for this population and including community members in developing such programs to ensure that participants reap the rewards of MBIs instead of experiencing an additional burden.

24. Crowe, M., Jordan, J., Burrell, B., Jones, V., Gillon, D., & Harris, S. (2016). Mindfulness-based stress reduction for long-term physical conditions: A systematic review. *Australian & New Zealand Journal of Psychiatry*, 50(1), 21-32. <https://doi.org/10.1177/0004867415607984>.

Crowe et al. (2016) investigated the effectiveness of Mindfulness-Based Stress Reduction (MBSR) for individuals with long-term physical disabilities and illnesses. The authors reviewed 15 studies exploring the impact of MBSR on physical health outcomes, including pain management, quality of life, and psychological well-being. The authors concluded that MBSR studies demonstrating high internal validity did not report significant improvements in health outcomes. However, some emerging data suggest meaningful applications for pain management.

This article emphasizes the duality of current research outcomes, highlighting that many resources show significant and insignificant effects on outcomes such as mental health and quality of life. The authors do posit that there is some evidence that MBSR may be helpful for the chronic illness and disability communities but caution that more extensive research is needed before these interventions should be recommended to improve physical outcomes for this population.

25. Cramer, H., Haller, H., Lauche, R., & Dobos, G. (2012). Mindfulness-based stress reduction for low back pain: A systematic review. *BMC Complementary and Alternative Medicine*, 12, 162.
<https://doi.org/10.1186/1472-6882-12-162>.

Cramer et al. (2012) review the effectiveness of Mindfulness-Based Stress Reduction (MBSR) for people suffering from lower back pain. The authors review seven studies that examined the impact of MBSR on pain intensity, physical functioning, and quality of life. They determined that there is inconclusive evidence to support the use of MBSR about pain intensity and disability in this population. However, they did note that there is some evidence that MBSR may positively influence pain acceptance compared to no treatment controls. More recent studies have been conducted on pain management and chronic illness and disability. This article will serve as a milestone in evaluating how mindfulness research has evolved.

26. Cushing, R. E., & Braun, K. L. (2018). Mind-body therapy for military veterans with post-traumatic stress disorder: A systematic review. *Journal of Alternative and Complementary Medicine*, 24(2), 106-114.
<https://doi.org/10.1089/acm.2017.0176>.

Cushing and Braun (2018) assess the effectiveness of mind-body therapies for military veterans diagnosed with post-traumatic stress disorder (PTSD). The authors reviewed 15 records exploring the use of therapies such as mindfulness-based stress reduction (MBSR), yoga, and other mind-body interventions used to address PTSD symptoms in veterans. Based on the effect size between the intervention and control groups, the authors suggest MBSRs may be effective in decreasing symptoms associated with PTSD in the veteran population.

This study is particularly relevant as it underscores the potential of mind-body interventions as effective, non-invasive treatments for PTSD in military populations,

which can be a valuable addition to conventional therapies. It is also the first systematic literature to synthesize data related to the impact of mind-body interventions on post-9/11 veterans with a diagnosis of PTSD.

D

- 27. Daya, Z., & Hearn, J. H. (2018). Mindfulness interventions in medical education: A systematic review of their impact on medical student stress, depression, fatigue, and burnout. *Medical Teacher*, 40(2), 146-153. <https://doi.org/10.1080/0142159X.2017.1394999>.**

Daya and Hearn (2018) examine the effectiveness of mindfulness-based interventions (MBIs) in reducing psychological distress in medical students. The authors reviewed 12 studies exploring the impact of MBIs or mindfulness exercise on rates of stress, burnout, fatigue, or depression. Similar to previous systematic reviews, the authors report mixed evidence for the effectiveness of MBIs in treating psychological distress in this population, with 67% of studies reporting a significant reduction post-intervention, one study reporting an improvement in burnout, and no studies reporting an improvement in fatigue.

This review underscores the mixed evidence presented for several applications of MBIs in addressing mental health outcomes, and the authors reiterate a typical call for both replication and follow-up evaluations in this population.

- 28. de Entrambasaguas, M., Díaz-Silveira, C., Burgos-Julián, F. A., & Santed, M. A. (2023). Can mindfulness-based interventions improve outcomes in cognitive-behavioural therapy for chronic insomnia disorder in the general population? Systematic review and meta-analysis. *Clinical Psychology & Psychotherapy*, 30(5), 965-978. <https://doi-org.ezproxy.library.yorku.ca/10.1002/cpp.2874>**

de Entrambasaguas et al.(2023) weigh whether there is evidence to support the use of mindfulness-based interventions (MBIs) in individuals experiencing Chronic Insomnia Disorder (ID). They argue that MBIs have been increasingly incorporated into treatment protocols without supportive evidence. They conducted a systematic review and meta-analysis to assess the effectiveness of using MBIs as a component of CBT for insomnia (CBT-I). The authors concluded that combining MBIs with CBT-I did not positively impact individuals with DI.

The authors raised an interesting criticism of current mindfulness research regarding the characterization of MBIs and the methodologies used in clinical research. One example is that several of the RTCs studied used a combination of MBIs and CBT-I and could not tell if any positive effect was related to the introduction of CBT-I or the combination of CBT-I and MBI. Additionally, CBT-I and MBIs were not compared separately, so the results cannot separate the impact of CBT-I and MBIs individually versus combined.

29. Di Cara, M., Grezzo, D., Palmeri, R., Lo Buono, V., Cartella, E., Micchia, K., Formica, C., Rifici, C., Sessa, E., D'Aleo, G., Maresca, G., Bramanti, P., & Corallo, F. (2022). Psychological well-being in people with multiple sclerosis: A descriptive review of the effects obtained with mindfulness interventions. *Neurological Sciences*, 43(1), 211-217.

<https://doi.org/10.1007/s10072-021-05686-1>

Di Cara et al. (2022) assess the impact of mindfulness-based interventions (MBIs) on the mental health of people with multiple sclerosis (MS). The review encompasses several studies that report significant positive outcomes in mental health, including anxiety, depression, stress, and fatigue. Based on their review, it appears MBIs may improve psychiatric symptoms regardless of severity, even when these symptoms are associated with non-psychiatric medical conditions.

This theory mirrors findings in other chronic pain and chronic illness studies, such as cancer patients and survivors, which propose that the severity of psychological distress does not impact the effect of MBIs. However, the authors clarify that there is a potential

confounding variable in this theory. Positive outcomes may also be attributed to a change in patient's relationship with their bodies and an enhanced ability to cope physically and situationally. This possibility creates an interesting opportunity for future investigation within this population.

30. Dermatis, H., & Egelko, S. (2014). Buddhist mindfulness as an influence in recent empirical CBT approaches to addiction: Convergence with the Alcoholics Anonymous model. *Alcoholism Treatment Quarterly*, 32(2-3), 194-213. <https://doi.org/10.1080/07347324.2014.907012>

Dermatis and Egelko (2014) explore the effectiveness of a combined CBT and mindfulness approach to addiction compared with the Alcoholics Anonymous (AA) model. The authors reviewed “third-wave” CBT programs, such as Mindfulness-Based Relapse Prevention (MBRP) and Mindfulness-Based Stress Reduction (MBSR). They concluded that AA and third-wave CBT emphasize behavioural change and self-awareness, but mindfulness practices offer additional benefits. The authors suggest that integrating these approaches could enhance future treatment outcomes for individuals with substance use disorders.

This study is the first to comprehensively analyze the intersection between Buddhist mindfulness practices and AA's 12-step model within a third-wave CBT framework. The authors noted that mindfulness-based interventions help participants develop a nonjudgmental attitude toward their thoughts and experiences, which may complement AA's focus on behavioural change via peer support. The authors underscore the potential benefits of integrating these approaches into a more holistic treatment for addiction. They also suggest expanding the applications of this combined therapeutic approach to other populations.

31. Dunn, C., Haubenreiser, M., Johnson, M., Nordby, K., Aggarwal, S., Myer, S., & Thomas, C. (2018). Mindfulness approaches weight loss, weight maintenance, and weight regain. *Current Obesity Reports*, 7(1), 37-49. <https://doi.org/10.1007/s13679-018-0299-6>

Dunn et al. (2018) examine the effectiveness of mindfulness-based interventions (MBIs) on weight loss, weight maintenance, and weight regain. The authors reviewed 12 studies to understand how mindfulness practices like mindful eating (ME) and mindfulness meditation (MM) contribute to weight management over time. The authors highlight that MBIs positively correlate with healthy eating behaviours and a reduction in emotional eating, promote sustained weight loss, and propose integrating these strategies into general weight loss plans.

This study clearly articulates the complexity of changing lifestyle behaviours, including food accessibility, physical mobility, body-image issues, emotions related to eating experiences, etc. While this review did report consistent weight loss in MBI samples, the authors noted that the improvements were modest compared to other weight loss modalities.

32. Dunning, D. L., Griffiths, K., Kuyken, W., Crane, C., Foulkes, L., Parker, J., & Dalgleish, T. (2019). Research Review: The effects of mindfulness-based interventions on cognition and mental health in children and adolescents—a meta-analysis of randomized controlled trials. *Journal of Child Psychology and Psychiatry*, 60(3), 244-258. <https://doi.org/10.1111/jcpp.12980>

Dunning et al. (2019) complete a systematic review and meta-analysis evaluating the impact of mindfulness-based interventions (MBIs) on behavioural, cognitive, and mental health outcomes in children and adolescents. The authors reviewed 33 randomized controlled trials (RCTs). They found that MBIs led to significant improvements in mindfulness, executive functioning, attention, depression, anxiety/stress, and negative

behaviours in children and young adults. However, they noted that the effect sizes were small.

Interestingly, the meta-analysis highlighted the need for more rigorous study methods, as the authors noted most previous evaluations lacked control conditions or randomization, which may have led to an overestimation of MBI effects in this population. The authors also highlighted that the developmental period of participants may directly impact effect size, as their analysis indicated older adolescents may benefit more from MBIs due to increased brain plasticity. The duration of MBI training was also found to significantly influence reductions in negative behaviours, aligning with previous studies that suggested that longer training periods yielded more significant benefits to participants.

E

33. Erdoğan Yüce, G., Döner, A., Bilgin, A., & Muz, G. (2024). The effect of mindfulness-based interventions on caregiver burden, quality of life and psychological distress in caregivers of adults with chronic diseases: Systematic review and meta-analysis of randomized controlled trials. *Worldviews on Evidence-Based Nursing*. <https://doi.org/10.1111/wvn.12736>

Erdoğan Yüce et al. (2024) synthesize existing research on using Mindfulness-Based Interventions (MBIs) to improve the quality of life for family caregivers of adults with chronic illness. The authors reviewed 12 studies exploring the effect of MBIs on stress, anxiety, depression, and caregiver burden. They were confident that MBIs resulted in a significant improvement in stress, anxiety, and depression but not in overall quality of life. The authors propose clinicians incorporate MBIs for family caregivers into their patient's treatment plans.

The authors emphasize that long-term family caregivers are at risk for their healthcare issues due to sleep disorders, increased stress, depression, etc., in addition to

decreases in their quality of life. Still, these changes often need to be acknowledged, especially by the healthcare system. The authors argue that a caregiver's long-term health is directly related to the patient's health outcomes in care. They speculate that tools such as MBIs for caregivers may result in lower medical costs, fewer medications, and indirect labour costs, but they are not covered by insurance, making them inaccessible to many people who would benefit from them. This relates specifically to the interconnectedness of the healthcare system and its reliance on family workers. It also strongly argues for developing evidence-based MBI apps and open-source tools.

- 34. Evans, S., Ling, M., Hill, B., Rinehart, N., Austin, D., & Sciberras, E. (2018). Systematic review of meditation-based interventions for children with ADHD. *European Child & Adolescent Psychiatry*, 27, 9-27.**
<https://doi.org/10.1007/s00787-017-1008-9>

Evans et al. (2018) examine the use of mindfulness-based interventions (MBIs) for children (up to 18 years of age) diagnosed with Attention Hyperactivity Deficit Disorder (ADHD). The authors reviewed 16 studies and concluded that no true impact could be observed due to a high risk of bias in the identified studies. As a result, the authors have called for new studies designed to reduce this risk of bias to determine the actual effect of MBIs on children with ADHD.

F

- 35. Feng, B., Hu, X., Lu, W. W., Wang, Y., & Ip, W. Y. (2022). Are mindfulness treatments effective for pain in cancer patients? A systematic review and meta-analysis. *European Journal of Pain*, 26(1), 61-76.**
<https://doi.org/10.1002/ejp.1849>

Feng et al. (2022) review the efficacy of Mindfulness-Based Interventions (MBIs) in managing pain in cancer patients. The authors reviewed ten studies and found through a meta-analysis that MBIs have a negligible effect on pain intensity in both short-term

and long-term follow-ups. However, no effect was found regarding pain interference (when pain interferes with daily mental, physical, and social activities). The authors suggest that further high-quality RTCs should be implemented to use MBIs for pain management in cancer patients. They also suggested further studies would help compare face-to-face MBI implementation vs. remote implementation, as face-to-face interventions showed a negligible effect on pain intensity while remote interventions did not.

36. Feng, B., Hu, X., Lu, W. W., Wang, Y., & Ip, W. Y. (2022). Are mindfulness treatments effective for pain in cancer patients? A systematic review and meta-analysis. *European Journal of Pain*, 26(1), 61-76.

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This article highlights the importance of appropriately differentiating between variables, as this study looked at two measurements of pain (intensity and interference) in addition to two delivery modes (in-person vs. remote). This emphasizes the importance of not assuming the generalizability of MBI tools from in-person to remote. It also highlights the limitations of some MBIs, where they may be helpful for certain aspects of a condition (such as pain intensity) and not for others, such as pain interference. This

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37. Fjorback, L. O., Arendt, M., Ørnbøl, E., Fink, P., & Walach, H. (2011).

Mindfulness-Based Stress Reduction and Mindfulness-Based Cognitive Therapy—a systematic review of randomized controlled trials. *Acta Psychiatrica Scandinavica*, 124(2), 102-119.

<https://doi.org/10.1111/j.1600-0447.2011.01704.x>

Fjorback et al. (2011) reviewed 21 articles comparing Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) against waitlist controls. The authors suggest that both interventions may reduce symptoms of distress, depression, and anxiety and improve coping skills in patients with psychiatric disorders. Three of the studies reviewed also suggest MBCT may be a cost-effective and accessible way to prevent relapse in patients who had previously recovered from depression, showing a medium effect size compared to existing psychological interventions for this population. The authors do highlight that current literature does not explain the mechanism by which MBCT and MBSR impact psychological disorders.

The authors dedicate a section of their introduction to a discussion on internal validity concerns in the research available during their study. Specifically, they are concerned that due to the growing popularity of mindfulness, the interventions delivered may be inappropriately applied or misunderstood entirely. This may result in studies under-reporting the effect size of mindfulness-based interventions (MBIs) in a given population. The authors call for future studies to have an active intervention component

and a follow-up after at least one year and that studies consistently report attrition rates, as participant buy-in to MBIs may contribute to their success for those patients.

38. Fulambarkar, N., Seo, B., Testerman, A., Rees, M., Bausback, K., & Bunge, E. (2023). Meta-analysis on mindfulness-based interventions for adolescents' stress, depression, and anxiety in school settings: a cautionary tale. *Child and Adolescent Mental Health*, 28(2), 307-317.
<https://doi.org/10.1111/camh.12572>

Fulambarkar et al. (2022) perform a meta-analysis assessing the effectiveness of mindfulness-based interventions (MBIs) on stress, depression, and anxiety in school settings for adolescents. The authors reviewed nine randomized-controlled trials (RCTs) and found that MBIs did significantly improve stress levels but had no significant effect on depression or anxiety. They noted that the overall effect size for stress, depression, and anxiety was small but significant when compared to inactive controls but not significant when compared to active controls.

This study highlights the importance of considering external validity when comparing clinical samples to the general adolescent population. The authors emphasize that while MBIs can be beneficial for reducing stress in school settings, their effectiveness for depression and anxiety remains uncertain. They call for future research to explore sustainable implementation strategies and more extended follow-up periods to understand better the long-term effects of MBIs on adolescent mental health. Continued mixed results across studies underscore the need for cautious interpretation and further research to determine the conditions under which MBIs are most effective.

G

- 39. Gard, T., Hölzel, B. K., & Lazar, S. W. (2014). The potential effects of meditation on age-related cognitive decline: a systematic review. *Annals of the New York Academy of Sciences*, 1307(1), 89-103.**
<https://doi.org/10.1111/nyas.12348>

Gard et al. (2014) review current research exploring the effects of various forms of meditation, including mantra-based meditations like Transcendental Meditation (TM) and Kirtan Kriya yogic meditation (KKYM), to Buddhist-based mindfulness practices such as Shamata-Vipassana and Zen, as well as non-secular forms like MBCT and MBSR on age-related cognitive decline. The authors reviewed 12 studies investigating several cognitive domains, including attention, memory, executive function, and processing speed. However, most studies had a high risk of internal bias and suffered from small sample sizes. The authors conclude that meditation interventions for older adults may be a feasible cognitive intervention and suggest that meditation can potentially offset age-related cognitive decline. Their most significant finding was that meditation may improve meditation-focused attention.

The authors highlight the need for future studies to measure quality of life and the effect of meditative practices on real-life functioning to understand the broader benefits of meditation. While most studies were small and underpowered, they did provide preliminary evidence that meditation may offset cognitive decline and enhance cognitive capabilities in older adults.

- 40. Garmon, B., Philbrick, J., Daniel Becker, M. D., John Schorling, M. D., Padrick, M., & Goodman, M. (2014). Mindfulness-based stress reduction for chronic pain: A systematic review. *Journal of Pain Management*, 7(1), 23.**

Garmon et al. (2014) evaluate the effectiveness of Mindfulness-Based Stress Reduction (MBSR) in managing chronic pain. The authors reviewed 23 studies and found mixed

results regarding the effectiveness of MBSRs in managing chronic pain. They concluded that no inferences could be drawn regarding the effectiveness of MBSRs in managing chronic pain based on the currently available data, though they acknowledge there were positive non-pain related effects.

The authors criticized the available studies for being small and convenient samples. They cautioned that interventions such as mindfulness may create self-sampling bias, so researchers should carefully manage the enrollment process and maintain transparency around attrition rates. They also suggest including a control group in future studies, as they note that not all participants may respond positively to a mindfulness-based intervention, which should be controlled to obtain meaningful data.

41. Geiger, P. J., Boggero, I. A., Brake, C. A., Caldera, C. A., Combs, H. L., Peters, J. R., & Baer, R. A. (2016). Mindfulness-based interventions for older adults: a review of the effects on physical and emotional well-being. *Mindfulness*, 7, 296-307. doi/10.1007/s12671-015-0444-1

Geiger et al. (2016) synthesize the effects of mindfulness-based interventions (MBIs) on older adults' physical and emotional well-being. The authors reviewed 15 studies and found mixed support for the use of MBIs in this population. While they noted there was consistent evidence supporting the emotional benefits of MBIs (including improvements in anxiety, depression, stress, and pain acceptance), outcomes regarding physical well-being were less clear. The authors suggest mixed findings may result from methodological flaws, study limitations, and inconsistent modifications of MBI protocols. The authors emphasize the need for future research to address these methodological issues.

The mixed results highlighted in this review underscore the complexity of evaluating MBIs for older adults. The consistent emotional benefits observed are encouraging, suggesting that MBIs play a role in improving emotional well-being in this population.

However, the variability in physical health outcomes suggests that more rigorous study designs and standardized protocols are needed. Interestingly, this review also observes the potential for high baseline levels of mindfulness in older adults, which may create a ceiling effect in self-reported measures. The authors discuss the possibility of age-related modifications in MBI protocols (previously suggested in adolescent studies), where tailoring interventions to each population's needs might enhance intervention effectiveness and attrition rates. These insights highlight the importance of continuing research to refine MBIs for diverse populations and ensure they meet the specific needs of older adults.

42. Ghahari, S., Mohammadi-Hasel, K., Malakouti, S. K., & Roshanpajouh, M. (2020). Mindfulness-based cognitive therapy for generalized anxiety disorder: a systematic review and meta-analysis. *East Asian Archives of Psychiatry*, 30(2), 52-56. <https://doi.org/10.12809/eaap1885>

Ghahari et al. (2020) analyze the effectiveness of mindfulness-based cognitive therapy (MBCT) for treating generalized anxiety disorder (GAD). The authors performed a meta-analysis of six high-quality studies and concluded there was a significant improvement in concerns such as stress and overall quality of life among GAD patients. These findings are aligned with other studies analyzing the effectiveness of MBCT in reducing anxiety symptoms and enhancing quality of life. However, the authors caution that the small number of studies analyzed, combined with their small sample size and variations in methodologies, means additional research is needed before definitive causal relationships can be established.

This review presents a strong case for the effectiveness of MBCT in managing GAD, emphasizing improvements in both emotional and physical well-being. The high methodological quality of the included studies and the absence of publication bias add credibility to the authors' findings. The suggestion that cultural differences may contribute to study heterogeneity is a unique insight, underscoring the importance of considering context when performing comparative analysis studies. Despite its

limitations, this review reinforces the potential of MBCT as a valuable treatment for GAD.

- 43. Grider, H. S., Douglas, S. M., & Raynor, H. A. (2021). The influence of mindful eating and/or intuitive eating approaches on dietary intake: a systematic review. *Journal of the Academy of Nutrition and Dietetics*, 121(4), 709-727. <https://doi.org/10.1016/j.jand.2020.10.019>**

Grider et al. (2021) review 14 studies to understand the effect of Mindful Eating (ME) and Intuitive Eating (IE) interventions on dietary intake in adults without eating disorders. The authors included 14 randomized trials - with nine focusing on energy intake and 12 on diet quality. Eight of the twelve articles did not find significant differences in diet quality between intervention and control groups. The studies generally showed poor quality, with a mean bias assessment score of 13.6 out of 28. The findings suggest limited evidence that ME and IE interventions influence energy intake or diet quality. The authors conclude that more rigorous future research is needed to draw strong conclusions about the effects of these interventions.

The authors determined only 2 of 9 articles focused on energy intake found a noteworthy result, and that results were inconsistent, in studies looking at diet quality. The authors emphasize the need for a standardized protocol for ME and IE interventions and validated tools to measure changes in these practices, as current studies fail to demonstrate consistent improvements.

- 44. Goldberg, S. B., Tucker, R. P., Greene, P. A., Davidson, R. J., Kearney, D. J., & Simpson, T. L. (2019). Mindfulness-based cognitive therapy for the treatment of current depressive symptoms: a meta-analysis. *Cognitive behaviour therapy*, 48(6), 445-462. <https://doi-org/10.1080/16506073.2018.1556330>**

Goldberg et al. (2019) examine the efficacy of mindfulness-based cognitive therapy (MBCT) for treating active depressive symptoms. The authors analyzed 13 randomized clinical trials (RCTs) and concluded that MBCT was superior to non-specific controls post-intervention but not at follow-up. They also found that comparisons with specific active controls showed no significant difference post-intervention or at follow-up. The authors noted that higher-quality studies showed smaller effects post-treatment, suggesting methodological quality impacts results. The small number of studies with follow-up evaluation indicates that the findings should be interpreted cautiously. Despite these limitations, this review reinforces the popular hypothesis that MBCT is a viable therapeutic intervention for depression.

This meta-analysis is the first in this review to focus specifically on people who are currently depressed, as opposed to those in remission, which is an interesting perspective. The discussion on the need for patient-specific interventions, including the potential for MBCT to benefit individuals with specific affective or cognitive styles, is intriguing. However, the small sample sizes and variations in methodologies across studies highlight the necessity for more standardized and larger-scale research. Finally, the authors noted that there is a lack of studies comparing MBCT to antidepressant medications, which is indeed a notable gap that future research should address.

45. Goldberg, S. B., Tucker, R. P., Greene, P. A., Davidson, R. J., Wampold, B. E., Kearney, D. J., & Simpson, T. L. (2018). Mindfulness-based interventions for psychiatric disorders: A systematic review and meta-analysis. *Clinical psychology review*, 59, 52-60. <https://doi.org/10.1016/j.cpr.2017.10.011>

Goldberg et al. (2018) examined the efficacy of mindfulness-based interventions (MBIs) for clinical populations. After reviewing 171 articles, the authors conclude that MBIs do significantly improve outcomes for conditions like depression, pain, and addictive behaviour disorder compared to waitlist controls but are not more effective than previously established evidence-based treatments.

Despite the promising future of MBIs for clinical populations, the authors raise concerns about using non-active control conditions and possible selective reporting biases. Additionally, the impact of practice duration and individual differences on the efficacy of MBIs still needs to be explored. These findings underscore the need for further research to refine and validate MBIs as treatments for psychiatric disorders.

46. Goodman, V., Wardrope, B., Myers, S., Cohen, S., McCorquodale, L., & Kinsella, E. A. (2019). Mindfulness and human occupation: A scoping review. *Scandinavian journal of occupational therapy*, 26(3), 157-170. <https://doi.org/10.1080/11038128.2018.1483422>

Goodman et al. (2019) review mindfulness studies concerning human occupation. The authors synthesize 20 articles, including both peer-reviewed and gray literature, and develop the "mindful occupation" theme, an informal mindfulness practice integrated into daily activities. The authors highlight several limitations in the available research, including the small number of empirical studies, inconsistent use of mindfulness measurement tools, and the need for more rigorous research to define and conceptualize mindfulness in occupation-based disciplines. The authors call for future research to explore the long-term effects of mindful occupations and the development of standardized mindfulness practices within these fields.

This review's unique focus on "mindful occupation" provides insight into how mindfulness can positively impact workers' engagement, well-being, and fulfilment at work. The authors also adeptly identify the murky definition of mindfulness in current studies as one source of heterogeneity of study results, making it challenging to pool studies for meta-analysis or compare studies.

47. Guillaumie, L., Boiral, O., & Champagne, J. (2017). A mixed-methods systematic review of the effects of mindfulness on nurses. *Journal of Advanced Nursing*, 73(5), 1017-1034. <https://doi.org/10.1111/jan.13176>

Guillaumie et al. (2017) evaluate the effects of mindfulness-based interventions (MBIs) on nurses and nursing students. The authors analyzed 32 studies and determined that mindfulness appeared to reduce state anxiety and depression immediately after treatment significantly and decrease state and trait anxiety upon follow-up. In addition to improving mental health in this population, the authors highlighted benefits such as increased calmness, better communication with patients and colleagues, and improved emotional regulation. However, the authors did note that more research is needed to explore the long-term impacts of MBIs on professional behaviour and relationships.

The authors emphasized the potential of mindfulness to improve not only mental health but also work performance and relationships among nurses and suggested that mindfulness could be incorporated into work-based programming to support the ongoing mental health of this population. They also pointed out two limitations of current research: a lack of follow-up with participants and a need for overall research exploring how MBIs may impact professional behaviours.

48. Guo, P., Zhang, X., Liu, N., Wang, J., Chen, D., Sun, W., ... & Zhang, W. (2021).

Mind-body interventions on stress management in pregnant women: A systematic review and meta-analysis of randomized controlled trials.

***Journal of Advanced Nursing*, 77(1), 125-146.**

<https://doi.org/10.1111/jan.14588>

Guo et al. explore the effect of mind-body interventions (MBIs) on stress in pregnant women. The authors pooled 28 randomized controlled trials (RCTs) and found significant improvements in stress during pregnancy for the MBI groups vs. the control groups. Their meta-analysis compared the impact of several MBIs, including mindfulness, cognitive behaviour therapy, relaxation techniques, and yoga and determined that all interventions effectively reduced stress in expectant mothers, with the greatest effect found for interventions of 4-8 weeks. The authors suggest that MBIs may be a safe and effective non-pharmacological avenue for reducing stress during pregnancy (and perhaps anxiety and depression). However, they note a high level of

heterogeneity and potential bias in the studies reviewed. Therefore, the authors call for additional high-quality research before drawing definitive conclusions.

This review makes several unique contributions to our mindfulness knowledge base. First, the authors conducted a meta-analysis of several subgroups within the dataset and made several pertinent discoveries. For example, this is the first study identified in this review that segments out African-American women for analysis. By segmenting this population, the authors found limited impact on high-risk groups, which relate to potential socioeconomic stressors unique to this population. The authors also compared individual and group MBIs and speculate that group formats may provide additional benefits to participants in the form of social support in the form of shared stories and the development of supportive social networks. This study's comprehensive analysis of different MBI formats and durations offers practical insights for health practitioners, reinforcing the potential for MBIs as flexible and accessible stress management tools during pregnancy.

**** Mentions socioeconomic impact as MBI limitation for the African-American population**

H

49. Hardison, M. E., & Roll, S. C. (2016). Mindfulness interventions in physical rehabilitation: A scoping review. *The American Journal of Occupational Therapy*, 70(3), 7003290030p1-7003290030p9. <https://doi.org/10.5014/ajot.2016.018069>

Hardison and Roll (2016) explore mindfulness interventions in physical rehabilitation, specifically focusing on occupational therapy (OT). The authors reviewed 16 articles studying people with musculoskeletal and chronic pain disorders (and trends showing improvements for neurocognitive and neuromotor disorders). They suggest that adaptation-based outcomes, including the acceptance of pain and disability, were immediately effective and maintained their effectiveness with long-term follow-ups.

However, the studies reviewed were limited by small sample size and insufficient control conditions to draw valid conclusions. The authors call for higher-quality research to evaluate the actual effect of MBIs and establish best practices for mindfulness in physical rehabilitation.

This study highlights the growing popularity of mindfulness within physical rehabilitation and other medically adjacent professions, emphasizing its potential benefits for managing chronic pain and enhancing overall well-being. This study underscores the importance of developing high-quality research to establish best practices and standardized evaluative measures to implement mindfulness interventions in rehabilitation settings effectively.

50. Harrison, S. L., Lee, A., Janaudis-Ferreira, T., Goldstein, R. S., & Brooks, D. (2016). Mindfulness in people with a respiratory diagnosis: a systematic review. *Patient Education and Counseling*, 99(3), 348-355.
<http://dx.doi.org/10.1016/j.pec.2015.10.013>

Harrison et al. (2016) evaluate the effects of mindfulness on health-related quality of life (HRQOL), mindful awareness, and stress in adults with respiratory diagnoses. The review included four studies focusing on Mindfulness-Based Stress Reduction (MBSR) interventions delivered at home through recordings. After a systematic review, the authors found no significant effects on disease-specific HRQOL, mindful awareness, or stress levels post-intervention. However, the authors noted variability in the intervention delivery among the four studies reviewed and echoed previous authors calling for standardized protocols and evaluation tools.

This review is one of many highlighting inconsistencies in research attempting to quantify the effectiveness of MBIs. These inconsistencies, from delivery method to evaluation and analysis, complicate direct comparison between studies and potential meta-analysis. Future research projects should standardize mindfulness interventions,

focus on specific sub-populations, and include long-term follow-up evaluations to determine the long-term benefits of MBIs for individuals with respiratory diagnoses.

51. Hathaisaard, C., Wannarit, K., & Pattanaseri, K. (2022). Mindfulness-based interventions reducing and preventing stress and burnout in medical students: A systematic review and meta-analysis. *Asian Journal of Psychiatry*, 69, 102997. doi.org/10.1016/j.ajp.2021.102997

Hathaisaard et al. examine the effectiveness of mindfulness-based interventions (MBIs) in reducing stress and burnout in medical students. The authors review six high-quality randomized controlled studies (RCTs) and found that MBIs significantly reduced stress levels post-intervention and at a six-month follow-up evaluation. While their findings are consistent with previous meta-analyses in this population, the authors note a high overall risk of bias due to a lack of blinding and substantial missing outcome data. The authors support the hypothesis that incorporating mindfulness-based stress reduction programs into medical curricula could potentially manage stress in medical students. But, more high-quality studies are needed before a causal relationship can be determined.

The author's note regarding a high risk of bias and issues with data transparency highlights recurring issues in the studies reviewed for this paper. The authors believe missing data on study outcomes may have a significant impact on their and other's meta-analysis efforts and that this information should be presented in future studies to illuminate potential bias in study results.

52. Heinen, J. M., Laing, E. M., Schäffeler, N., Bäuerle, A., Krakowczyk, J. B., Schug, C., ... & Graf, J. (2024). How do mindfulness-based interventions promote coping and self-efficacy in patients with cancer: A systematic review of qualitative and quantitative data. *Psycho-Oncology*, 33(5), e6350. doi.org/10.1002/pon.6350

Heinen et al. (2024) investigate how mindfulness-based interventions (MBIs) promote coping and self-efficacy in people with cancer. The authors reviewed 28 reports which indicated MBIs may have a significant effect on coping skills (re: cancer-related stressors, self-regulation, and perceived efficacy in cancer patients). Three main themes were identified in the literature, indicating that MBIs provide stress management tools, promote positive mindset shifts, and enhance social connectedness.

This study is unique in that it touches on the importance of community and social connectedness for cancer patients. The authors also continue the discussion on continued variability in study design and outcomes for MBI research. They echo calls for standardized intervention protocols and evaluation tools and assert future research should focus on the long-term impacts of MBIs on improving the quality of life for cancer patients.

53. Heo, S., Kang, J., Umeakunne, E., Lee, S., Bertulfo, T. F., Barbé, T., ... & Randolph, J. (2023). Effects of meditation intervention on self-management in adult patients with type 2 diabetes: A systematic literature review and meta-analysis. *Journal of Cardiovascular Nursing*, 38(6), 581-592. <https://doi.org/10.1097/JCN.0000000000000973>

Heo et al. (2023) examine the effect of mindfulness-based interventions (MBIs) on adults with type 2 diabetes. The authors reviewed ten randomized controlled trials (RCTs) focused on outcomes such as hemoglobin A1c (HbA1c), fasting blood glucose, blood pressure, cholesterol, and body mass index. Their meta-analysis suggests that

MBIs significantly affected HbA1c levels, but only inconsistent improvements were identified in fasting blood glucose and other self-management outcomes.

The authors suggest that this is the first systematic review that has examined the effect of MBIs as an independent intervention on Type 2 Diabetes (i.e. without the inclusion of an additional dietary or exercise protocol). While the authors are confident in identifying a trend between MBIs and A1c levels, they concluded there were not enough high-quality RTCs to calculate the efficacy of MBIs for other self-management outcomes in this population.

54. Hilton, L., Hempel, S., Ewing, B. A., Apaydin, E., Xenakis, L., Newberry, S. & Maglione, M. A. (2017). Mindfulness meditation for chronic pain: systematic review and meta-analysis. *Annals of Behavioral Medicine*, 51(2), 199-213.
<https://doi.org/10.1007/s12160-016-9844-2>

Hilton et al. (2016) examine the efficacy and safety of mindfulness meditation interventions (MBIs) for people experiencing chronic pain. The authors reviewed 38 randomized controlled trials assessing outcomes including pain, depression, and overall quality of life. The authors determined that MBIs are associated with marginal but significant decreases in pain compared to treatment as usual, as well as improvements in depressive symptoms and quality of life. However the authors caution that the studies available are low in quality and show a high level of heterogeneity in their results. The authors speculate this may be related to publication bias and encourage the publication of additional studies. They also highlight that the studies did not track adverse events, which are also an important variable of interest in this population.

55. Hoge, E. A., Philip, S. R., & Fulwiler, C. (2019). Considerations for mood and emotion measures in mindfulness-based intervention research. *Current Opinion in Psychology*, 28, 279-284.
<https://doi.org/10.1016/j.copsyc.2019.02.001>

Hoge et al. (2019) reviewed the measures of mood and emotion used in current mindfulness-based intervention (MBI) research. The authors found that most research studies used self-report measures to assess mood and emotion-related variables, which they consider reliable only if the responses correlate with objective data (which they often do not - or no objective data is available). The authors posit that physiological data is more objective but requires further validation before it can stand independently. Because of this, they suggest combining self-report scales with objective behavioural measures as a standard practice to increase internal validity in future MBI research.

This is the first paper in this literature review that examines the assays used to evaluate mood and emotion with MBIs. The author's discussion underscored the importance of standardizing measures across studies to improve the comparability and validity of research findings, calling for future research to focus on developing and utilizing comprehensive measurement tools that combine subjective and objective assessments to reliably capture the full spectrum of emotional changes related to MBIs.

J

56. Jackson, W., Zale, E. L., Berman, S. J., Malacarne, A., Lapidow, A., Schatman, M. E., ... & Vranceanu, A. M. (2019). Physical functioning and mindfulness skills training in chronic pain: a systematic review. *Journal of Pain Research*, 179-189. <https://dx.doi.org/10.2147/JPR.S172733>

Jackson et al. (2019) assessed the impact of mindfulness skills training (MST) on physical functioning in people with chronic pain. The authors reviewed 15 randomized controlled trials (RCTs) that assessed physical function using self-reported and performance-based measures. Upon analysis, the evidence was inconclusive, with five studies reporting significant improvements in self-reported physical function and ten studies reporting no significant difference compared to control groups. The authors highlight the need for more consistent and comprehensive assessments, including

standardizing performance-based measures and evaluation tools to compare future studies effectively.

This study is one of a handful identified so far that focus on physical functioning as an aspect of chronic pain management. Unlike other authors, they also advocate for using self-report measures in the chronic pain sphere as an important evaluative tool for this population. However, they acknowledge that this area of study requires more intentional evaluation tools and higher quality studies (including larger sample sizes and environmental control) to draw meaningful conclusions about the effectiveness of MST for this (or any) population.

57. Jain, F. A., Walsh, R. N., Eisendrath, S. J., Christensen, S., & Cahn, B. R. (2015). Critical analysis of the efficacy of meditation therapies for acute and subacute phase treatment of depressive disorders: a systematic review. *Psychosomatics*, 56(2), 140-152. <https://doi.org/10.1016/j.psych.2014.10.007>

Jain et al. (2015) analyze the efficacy of meditation-based interventions (MBIs) on both acute and subacute depressive disorders. The authors reviewed 18 randomized controlled trials (RCTs), comparing Mindfulness-Based Cognitive Therapy (MBCT), Tai Chi, Sudarshan Kriya Yoga (SKY), and others. They found the most significant effect in people experiencing an acute major depressive episode (MDE), which they speculate may point to a ceiling effect for people who are in partial or complete remission. However, the authors determined that the studies reviewed were too dissimilar in study design and intervention implementation to differentiate between individual therapies for this population. Like many others in this field, the authors call for more extensive studies and standardized methodologies to draw meaningful conclusions regarding the efficacy of MBIs in this population.

Notably, this is the first study that has called for public registration of trials to combat publication bias. They are also the first to highlight heterogeneity between waitlist

controls and treatment-as-usual controls, indicating that the control group is not “inert” and may be subject to the placebo or nocebo effect. The authors suggest it may be beneficial to include an evaluation of participant expectations in the experimental and control groups to account for individual expectations.

58. Jiang, A., Rosario, M., Stahl, S., Gill, J. M., & Rusch, H. L. (2021). The effect of virtual mindfulness-based interventions on sleep quality: A systematic review of randomized controlled trials. *Current psychiatry reports*, 23, 1-12. <https://doi.org/10.1007/s11920-021-01272-6>

Jiang et al. investigate the effect of virtual mindfulness-based interventions (MBIs) on sleep quality. The authors analyzed ten randomized controlled trials (RCTs) and determined that virtual MBIs significantly improved sleep quality compared to usual care and waitlist controls. Their findings suggest that virtual MBIs may be comparable to evidence-based treatments (like CBT) and sometimes more effective than non-specific active controls in reducing recurrent sleep disturbance. As this study was completed in the context of the COVID-19 pandemic, the authors also highlight the potential of virtual MBIs as a reasonable alternative during pandemic-related restrictions. However, the authors do caution that issues including high attrition rates, varying definitions of adherence, and a lack of long-term sustainability for some aspects of sleep quality may present significant limitations for this population.

This review’s emphasis on the virtual delivery of MBIs aligns with emerging trends in telehealth by providing evidence that virtual MBIs could be as effective as in-person treatments, which would significantly increase accessibility. The study’s focus on COVID-19-related sleep disruption is particularly relevant, reflecting a new and significant context for sleep research. The authors also suggest virtual MBIs complement existing evidence-based treatments or serve as a reasonable alternative for populations that might not tolerate traditional CBT treatment methods such as sleep

restriction. This article serves as an additional example of the importance of building flexibility into MBIs in healthcare.

**** Related to COVID-19 quarantine**

K

59. Kajee, N., Montero-Marin, J., Saunders, K. E., Myall, K., Harriss, E., & Kuyken, W. (2024). Mindfulness training in healthcare professions: a scoping review of systematic reviews. *Medical Education*, 58(6), 671-686.

<https://doi.org/10.1111/medu.15293>

Kajee et al. (2024) perform a scoping review of systematic reviews evaluating the effectiveness of Mindfulness-Based Interventions (MBIs) on the mental health, well-being, and communication skills of healthcare professionals (HCPs). The authors review 16 studies and conclude that MBIs generally improve mental health and well-being across different HCP groups, though results for burnout are inconclusive. The authors also note that HCPs outside of medicine and nursing are underrepresented in the literature. Despite the promising outcomes for mental health and empathy, the authors emphasize the need for more research addressing the high level of stress and burnout attributed to the demanding working conditions in this population.

This review highlights a significant limitation for studies focused on HCPs, suggesting that while MBIs may benefit this population, there are more comprehensive solutions for severe occupational stress and burnout. The authors rightly call for improved working conditions rather than solely relying on individual resilience-building interventions like MBIs, which resonates with our critique of the current neoliberal approach to healthcare. The authors also discuss the current state of MBI research, broadly criticizing the lack of standardized measures and operational definitions, lack of transparency in data reporting, and continuous bias, mirroring calls for more rigorous research methods and higher reporting standards found in previous studies reviewed for this project.

60. Kelson, J., Rollin, A., Ridout, B., & Campbell, A. (2019). Internet-delivered acceptance and commitment therapy for anxiety treatment: systematic review. *Journal of medical Internet research*, 21(1), e12530. doi:10.2196/12530

Kelson et al. (2019) evaluate the impact of internet-delivered Acceptance and Commitment Therapy (iACT) on anxiety. The authors reviewed 20 studies. Their findings indicate that iACT could be an effective treatment for generalized anxiety disorder (GAD), social anxiety disorder (SAD), illness anxiety disorder (IAD), and general anxiety symptoms. The authors report that most studies showed significant reductions in anxiety symptoms, with some showing large effect sizes. However, the review highlighted the need for more RCTs to confirm these findings, particularly in comparison to established treatments like internet-delivered cognitive behavioural therapy (iCBT). The authors also noted that attrition and treatment adherence varied between the studies reviewed, with some studies having high dropout rates. The quality of studies also varied, with some using less rigorous designs (uncontrolled pilot studies), limiting the findings' external validity.

This review is a valuable addition to our current knowledge base, particularly in the context of healthcare accessibility. The authors' findings support the potential use of iACT as a reasonable alternative to iCBT, especially for individuals facing barriers to traditional face-to-face therapy, such as geographical distance, finances, or therapist shortages. While including pilot studies underscores the preliminary nature of this research area, it also underscores the need for more robust RCTs to validate these findings. Similarly to previously reviewed studies, the variability in attrition rates and adherence issues highlights the need to formalize the facilitation and evaluation of iACT programs. This review's emphasis on the broader accessibility of iACT aligns with our paper's themes of increasing mental health support through innovative and scalable solutions, making it an essential resource for our literature review.

61. Kriakous, S. A., Elliott, K. A., Lamers, C., & Owen, R. (2021). The effectiveness of mindfulness-based stress reduction on the psychological functioning of healthcare professionals: A systematic review. *Mindfulness*, 12, 1-28.

<https://doi.org/10.1007/s12671-020-01500-9>

Kriakous et al. (2021) assess the efficacy of mindfulness-based stress reduction (MBSR) on the psychological functioning of healthcare professionals (HCPs). The authors review 30 studies, including randomized controlled trials (RCTs), clinical controlled trials (CCTs), and pre-post designs without control groups. They found that MBSR effectively reduces anxiety, depression, and stress among HCPs. However, MBSR showed limited effectiveness in reducing burnout or improving resilience. The authors again highlight the need for higher-quality studies with more rigorous designs, larger sample sizes, and more diverse populations. The authors also noted that abbreviated MBSR programs were as effective as traditional 8-week programs, and further research should investigate the specific factors influencing MBSR outcomes, such as adherence, duration, and the role of self-selected samples.

This study is one of many indicating that MBSR reduces anxiety, depression, and stress for HCPs. However, the limited impact on burnout and resilience is also recurring, indicating that structural changes in the workplace are likely necessary to address these issues effectively. This is also the third paper that identified abbreviated MBSR interventions as equally effective as typical 8-week interventions, indicating that shorter interventions could be integrated into HCPs' demanding schedules without losing effectiveness. This review adds more nuance to the effect of MBSR and emphasizes the importance of exploring how mindfulness-based interventions can be used most effectively in different populations.

62. Kretschmer, C. R., Göz Tebrizcik, B., & Dommett, E. J. (2022). Mindfulness Interventions for Attention Deficit Hyperactivity Disorder: A Systematic Review and Meta-Analysis. *Psychiatry International*, 3(4), 363-399.
<https://doi.org/10.3390/psychiatryint3040031>

Kretschmer et al. (2022) evaluate mindfulness-based interventions (MBIs) for people with ADHD. The authors review 22 studies examining a range of outcomes and suggest MBIs may improve anxiety, depression, and overall quality of life in the ADHD population. They also found potential improvements in ADHD symptoms such as executive dysfunction and emotional dysregulation, though improvements may vary by participant age and intervention delivery. The authors highlight the need for more high-quality controlled studies, noting that many reviewed studies lacked randomization, control conditions, and blinding. Additionally, many studies allowed daily medication use without providing information on medication types or dosages. This study echoes several more recent studies, still chastising past researchers in the mindfulness field for extreme variability in research design and evaluation, making meaningful meta-analysis prohibitive.

One unique perspective of this paper is that the authors stress the importance of parents of children with ADHD also participating in MBIs, emphasizing the significant role of parental influence on child outcomes. They are also the first identified to voice concern regarding the validity of evaluations in mindfulness for this population, stressing that a lack of control over confounding variables means we cannot truly ascertain if significant outcomes are related to interventions or something else.

- 63. Kraines, M. A., Peterson, S. K., Tremont, G. N., Beard, C., Brewer, J. A., & Uebelacker, L. A. (2022). Mindfulness-based stress reduction and mindfulness-based cognitive therapy for depression: A systematic review of cognitive outcomes. *Mindfulness*, 13(5), 1126-1135.**
<https://doi.org/10.1007/s12671-022-01841-7>

Kraines et al. (2022) examine the cognitive effects of Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) in people with depression. The authors review ten studies, including single-arm and randomized controlled trials (RCTs), concluding that MBSR and MBCT have inconsistent effects on cognitive outcomes, attributing to varied definitions and terminology, divergent samples, and inconsistent methodologies across studies. While the reviewed studies claim MBSR and MBCT are designed to target cognitive processes associated with depression, the authors found the evidence of their efficacy in improving cognitive functions remains mixed (some finding change and some finding none). The review underscores the need for more standardized approaches to studying cognitive outcomes in depressed individuals, including the use of consistent measures and terminology. While the findings are promising, they also highlight the need for rigorous and consistent research to better understand the cognitive impacts of MBSR and MBCT.

- 64. Kundarti, F. I., Titisari, I., Rahayu, D. E., Kiswati, & Jamhariyah. (2023). Mindfulness improves the mental health of infertile women: A systematic review. *Journal of Public Health Research*, 12(3), 22799036231196693.**
<https://doi.org/10.1177/2279903623119669>

Kundarti et al. (2023) examine the effects of mindfulness on the mental health of infertile women. The authors reviewed nine articles and found that Mindfulness-Based Interventions (MBIs), including Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT), significantly reduce mental health disorders such as stress, anxiety, and depression in infertile women. The authors noted

multiple types of MBIs appear to be effective in targeting specific mental health issues, indicating their versatility and effectiveness.

Interestingly, the authors claim that MBIs can reduce anxiety levels in infertile women by up to 76%, with MBSR explicitly recommended for stress and anxiety and MBCT recommended for reducing depression. This is the first study identified in this review that separates MBSR and MBCT interventions for addressing specific aspects of complex mental health issues within the same population. The authors also noted that infertile women are more susceptible to stress, anxiety, and depression due to the length of fertility treatments, which may provide an interesting perspective for addressing prolonged climate grief and eco-anxiety. However, while the authors appear confident in their findings, the lack of long-term follow-up in the reviewed studies limits our understanding of the long-term benefits of MBSR and MBCT in this population.

L

- 65. Lee, Y. C., Chen, C. R., & Lin, K. C. (2022). Effects of mindfulness-based interventions in children and adolescents with ADHD: A systematic review and meta-analysis of randomized controlled trials. *International Journal of Environmental Research and Public Health*, 19(22), 15198.**
<https://doi.org/10.3390/ijerph192215198>

Lee et al. (2022) examine the effects of Mindfulness-Based Interventions (MBIs) on children and adolescents with ADHD. The authors review 12 studies and conclude that MBIs may improve behavioural problems and mindfulness in children and stress in parents. The authors focused on studies employing three types of MBIs: yoga, mindfulness-based psychological interventions, and meditation training. Their meta-analysis showed moderate-to-large improvements in ADHD symptoms, particularly in older children, while positive effects in mindfulness were small to moderate. The authors join a line of other systematic reviews highlighting the need for

higher-quality controlled studies to produce meaningful meta-analysis studies for this population.

The authors' finding that older children show more significant improvements than their younger counterparts aligns with existing research on the path of developmental changes in children with ADHD. The authors' observation that different mindfulness techniques may be more or less effective for different populations is also noteworthy and could be an interesting avenue for future research on broader populations. This is the second review to include parental stress as an outcome, which continues to highlight the complexity of ADHD and the broader impact of neurodivergence on family dynamics.

66. Li, J., Cai, Z., Li, X., Du, R., Shi, Z., Hua, Q., ... & Zhan, X. (2021).

Mindfulness-based therapy versus cognitive behavioural therapy for people with anxiety symptoms: a systematic review and meta-analysis of random controlled trials. *Annals of palliative medicine*, 10(7), 7596612-7597612. <https://dx.doi.org/10.21037/apm-21-1212>

Li et al. (2021) investigate the ability of Mindfulness-Based Interventions (MBIs) and Cognitive Behavioral Therapy (CBT) to improve anxiety symptoms, including secondary outcomes of depression and sleep quality. The authors reviewed 11 randomized controlled trials and found no significant difference between MBIs and CBT in all outcomes, indicating MBIs could be a cost-effective alternative to CBT for anxiety symptoms. However, the authors note the need for higher-quality studies with standardized measurements and follow-up periods to improve research quality and comparability.

Interestingly, the authors highlight that MBIs were favoured over CBT for patients with anxiety symptoms that do not meet the diagnostic criteria for anxiety disorder, while no difference was observed for people who did meet the criteria. The study's observation

that MBIs may be particularly beneficial for those with subthreshold anxiety symptoms is unique and could inform future clinical practices and research. This was also the first study to clearly articulate the need to broaden demographics beyond WEIRD countries to understand better how MBIs may apply across different demographics, countries, and cultures.

**** First to acknowledge research focus on WIERD demographics**

67. Lin, L. Y., Lin, L. H., Tzeng, G. L., Huang, Y. H., Tai, J. F., Chen, Y. L., ... & Hung, P. L. (2022). Effects of mindfulness-based therapy for cancer patients: A systematic review and meta-analysis. *Journal of Clinical Psychology in Medical Settings*, 29(2), 432-445. <https://doi.org/10.1007/s10880-022-09862-z>

Lin et al. (2022) conduct a systematic review and meta-analysis on the effects of Mindfulness-Based Stress Reduction (MBSR) and Mindfulness-Based Cognitive Therapy (MBCT) on the quality of life in cancer patients. The authors reviewed 18 randomized controlled trials (RCTs) and found significant improvements in anxiety, depression, pain, fatigue, and overall quality of life in this population. The findings suggest that MBSR/MBCT interventions are particularly effective in the early stages of cancer and for younger patients. However, the authors stress the need for standardized protocols and more rigorous methodologies to ensure reliable and consistent results.

This review is unique as it examines the broader effects of mindfulness-based interventions across various types of cancer, unlike previous studies that tend to focus solely on breast cancer. This underscores the need for future research to explore the effects of MBIs across different demographics and cancer stages. The authors highlight the potential of MBIs to address psychological distress, emphasizing the importance of considering physical and emotional well-being in cancer treatment. The call for standardized methodologies and long-term follow-up aligns with ongoing concerns in mindfulness research, making this a critical area for future investigation.

68. Lin, H. W., Tam, K. W., & Kuan, Y. C. (2023). Mindfulness or meditation therapy for Parkinson's disease: A systematic review and meta-analysis of randomized controlled trials. *European Journal of Neurology*, 30(8), 2250-2260. <https://doi.org/10.1111/ene.1583>

Lin et al. (2023) investigate the effect of mindfulness and meditation therapies on patients with Parkinson's Disease (PD). The authors reviewed nine articles and found that mindfulness and meditation therapies significantly improved Unified Parkinson's Disease Rating Scale-Part III (UPDRS-III) scores and cognitive function. However, no significant improvements were found in gait velocity, quality of life (PDQ-39 SI), activities of daily living (ADLs), depression, anxiety, pain, or sleep disturbances. The authors emphasize the need for higher-quality studies with standardized methodologies and longer follow-up periods to enhance the reliability of these findings.

This review highlights the potential of mindfulness and meditation therapies as complementary treatments for PD, particularly in improving motor and cognitive functions. The authors note the unique challenge of maintaining patient focus during video-mediated sessions, suggesting the need for in-person or highly engaging digital formats. The observation that physical exercise amplifies the benefits of mindfulness interventions underscores the importance of integrating holistic approaches in PD treatment. Notably, the authors point out significant improvements in cognitive function but not psychiatric symptoms, possibly due to increased awareness of personal health and isolation in new practitioners. This finding aligns with broader trends of loneliness among populations with mobility issues, indicating a critical area for future research to explore the long-term efficacy and personalized application of these interventions.

69. Liu, Z., Chen, Q. L., & Sun, Y. Y. (2017). Mindfulness training for psychological stress in family caregivers of persons with dementia: a systematic review and meta-analysis of randomized controlled trials. *Clinical Interventions in Aging*, 1521-1529. <https://doi.org/10.2147/CIA.S146213>

Liu et al. (2017) conducted a systematic review and meta-analysis to evaluate the effectiveness of mindfulness training on stress-related outcomes in family caregivers of dementia patients. The authors reviewed seven randomized controlled trials (RCTs). They determined that mindfulness interventions significantly improved depression, perceived stress, and overall quality of life but had no significant effect on levels of caregiver burden or anxiety. The authors highlight the potential of mindfulness training as a beneficial intervention for reducing stress and depression among dementia caregivers, but stress and its impact on anxiety and burden remain inconclusive.

Interestingly, the authors note that decreased effects on anxiety and burden in this population may be due to the complexity and multifaceted nature of these outcomes. The authors also suggest that mindfulness might help caregivers by increasing awareness and non-judgmental acceptance of their experiences, which they believe are crucial in managing chronic stress. They recommend future research should focus on larger, more rigorous trials to confirm these theories and explore strategies to address anxiety and caregiver burden better.

70. Liyanage, S., Addison, S., Ham, E., & Hilton, N. Z. (2022). Workplace interventions to prevent or reduce post-traumatic stress disorder and symptoms among hospital nurses: a scoping review. *Journal of Clinical Nursing*, 31(11-12), 1477-1487. <https://doi.org/10.1111/jocn.16076>

Liyanage et al. (2021) evaluate workplace interventions aimed at preventing or reducing post-traumatic stress disorder (PTSD) and its symptoms among hospital nurses. The authors reviewed six studies comparing mindfulness meditation, educational reading on trauma and coping, institutional debriefing, multimodal resilience training, mindful exercise, and guided imagery. The authors found that four of these interventions significantly reduced PTSD symptoms at follow-up, contributing to the evidence of reducing workplace trauma. However, they also identify gaps, including the absence of

interventions specifically designed to prevent PTSD among nurses and the need for larger, more diverse studies to enhance the generalizability of findings.

This review underscores the importance of workplace interventions in addressing PTSD among hospital nurses, emphasizing the potential of mindfulness-based exercises, resilience training, and guided imagery in mitigating PTSD symptoms. The authors highlight significant gaps, such as the lack of interventions specifically targeting PTSD prevention and the need for larger, more diverse studies to improve the applicability of findings. Notably, the review suggests that interventions effective for burnout and compassion fatigue may not be as effective for PTSD, echoing the need for tailored approaches. Future research should explore system-level interventions and the impact of specific trauma types on PTSD development to provide comprehensive support for nurses' mental health.

71. Lu, C. P., Dijk, S. W., Pandit, A., Kranenburg, L., Luik, A. I., & Hunink, M. M. (2024). The effect of mindfulness-based interventions on reducing stress in future health professionals: A systematic review and meta-analysis of randomized controlled trials. *Applied Psychology: Health and Well-Being*, 16(2), 765-792. <https://doi.org/10.1111/aphw.12472>

Lu et al. (2023) assess the effectiveness of mindfulness-based interventions (MBIs) in reducing stress among students in health professions through a systematic review and meta-analysis. The authors reviewed 11 randomized controlled trials (RCTs) and found that MBIs significantly reduce stress levels. However, they also noted high heterogeneity and a high risk of bias among the included studies, emphasizing the need for higher-quality research to validate these findings further and explore the long-term impact of MBIs on stress reduction.

Notably, the review suggests that non-mandatory participation in MBIs may lead to greater acceptance and satisfaction, potentially enhancing the effectiveness of these interventions. The authors also pointed out that variability in control groups and study

designs contributes to the heterogeneity of the results. Future research should involve larger, more diverse studies to improve the generalizability of the findings and investigate which specific components of MBIs are most effective in reducing stress. Additionally, addressing stress and burnout early in the careers of health professionals is crucial to preventing long-term negative impacts on their mental health and patient care.

M

- 72. McCloy, K., Hughes, C., Dunwoody, L., Marley, J., & Gracey, J. (2022). Effects of mindfulness-based interventions on fatigue and psychological wellbeing in women with cancer: A systematic review and meta-analysis of randomized control trials. *Psycho-Oncology*, 31(11), 1821-1834.**
<https://doi.org/10.1002/pon.6046>

McCloy et al. (2022) investigate the efficacy of mindfulness-based interventions (MBIs) on cancer-related fatigue (CRF) and psychological well-being in female cancer patients. The authors reviewed 21 randomized controlled trials (RCTs) and found that MBIs significantly reduce CRF, depression, and anxiety but had no significant effects on quality of life (QoL) and sleep. They also noted considerable variability between studies, highlighting the need for further high-quality research to validate these findings and address the limitations of the existing evidence.

The study suggests that mindfulness interventions are effective in reducing CRF directly and indirectly by alleviating anxiety and depression. However, the lack of improvement in sleep and QoL indicates the need for more tailored approaches to these outcomes. The authors emphasize that the heterogeneity of the results may be related to the variability in study designs and types of mindfulness interventions implemented. They suggest that future research should involve larger and more diverse samples, consider the specific needs of different cancer types and stages, and address recruitment biases to ensure the findings can be generalized to broader clinical settings.

73. McKeering, P., & Hwang, Y. S. (2019). A systematic review of mindfulness-based school interventions with early adolescents. *Mindfulness*, 10 (4), 593–610. <https://doi.org/10.1007/s12671-018-0998-9>

McKeering and Hwang (2018) assess the effectiveness of mindfulness-based interventions (MBIs) in schools for early adolescents (aged 11-14). The authors reviewed 13 studies and found that MBIs lead to positive improvements in well-being, with medium to large effects in reducing negative mental traits (e.g., anxiety, affective disturbances) and small effects in enhancing positive mental traits (e.g., prosocial functioning). However, the authors noted methodological limitations and the need for more rigorous research to meet evidence-based practice criteria in educational settings.

The review by McKeering and Hwang (2018) brings to light the potential risks of implementing mindfulness-based interventions (MBIs) in schools for early adolescents (aged 11-14) without adequate support. While MBIs show promise in reducing negative mental health traits, the authors caution that they may be less effective in promoting positive traits. They also highlight the potential risks of implementing MBIs without adequate support, as mindfulness practice can sometimes expose underlying emotional conditions. This underscores the need for further research to ensure that MBIs are implemented safely and effectively in school settings.

N

74. Nunes, A., Castro, S. L., & Limpo, T. (2020). A review of mindfulness-based apps for children. *Mindfulness*, 11, 2089-2101. <https://doi.org/10.1007/s12671-020-01410-w>

Nunes et al. (2020) evaluate the quality of mindfulness-based apps for children. The authors assessed 57 apps using the Mobile App Rating Scale (MARS) and found that while most apps achieved an “acceptable” level of quality, few scored “good” across all dimensions. The authors highlight the need for significant improvements in engagement, functionality, aesthetics, and information to make these apps more

effective and appealing for children. Additionally, the authors noted a lack of empirical evidence supporting the effectiveness of these apps, emphasizing the necessity for future research.

Interestingly, the review points out the potential benefits of using mindfulness apps to support children's health and academic achievement, given their immersion in technology. However, the findings reveal considerable gaps, including the scarcity of high-quality, child-specific mindfulness apps and the lack of scientific evidence validating their effectiveness. The authors emphasize the importance of designing engaging, easy-to-use, and developmentally appropriate apps to ensure sustained use and effectiveness. Future research should focus on improving app quality, testing their effectiveness in diverse populations, and exploring the role of parents in mediating children's use of these apps.



75. Oliva, F., Malandrone, F., di Girolamo, G., Mirabella, S., Colombi, N., Carletto, S., & Ostacoli, L. (2021). The efficacy of mindfulness-based interventions in attention-deficit/hyperactivity disorder beyond core symptoms: A systematic review, meta-analysis, and meta-regression. *Journal of Affective Disorders*, 292, 475-486. <https://doi.org/10.1016/j.jad.2021.05.068>

Oliva et al. (2021) evaluate the efficacy of mindfulness-based interventions (MBIs) on ADHD symptoms and associated conditions in children and adults through a systematic review and meta-analysis. The authors reviewed 31 studies and found that MBIs significantly improved ADHD symptoms, particularly inattention, with a medium effect size. However, the effect on hyperactivity/impulsivity was smaller and decreased when accounting for publication bias. They also highlighted that MBIs had a moderate effect on anxiety and mindfulness skills but only a small effect on depression. The authors emphasize the need for more rigorous studies, particularly those comparing MBIs with active control conditions.

Notably, the review indicates that MBIs are more effective in reducing ADHD symptoms when compared to inactive controls rather than active controls. This suggests that while MBIs may complement existing treatments, they may not be sufficient as standalone interventions. The study also underscores the importance of using standardized mindfulness protocols and larger sample sizes to improve the reliability of findings. Future research should focus on understanding the specific components of MBIs that contribute to their effectiveness and explore their impact on various ADHD-associated features, such as emotional dysregulation and executive functioning.

76. Opie, J. E., Vuong, A., Welsh, E. T., Gray, R., Pearce, N., Marchionda, S., ... & Khalil, H. (2024). Outcomes of Best-Practice Guided Digital Mental Health Interventions for Youth and Young adults with emerging symptoms: part I. A systematic review of Socioemotional outcomes and recommendations. *Clinical child and family psychology review*, 1-52.
<https://doi.org/10.1007/s10567-024-00469-4>

Opie et al. investigate the effectiveness of digital mental health interventions (DMHIs) on socioemotional outcomes in youth (ages 12-25). The authors reviewed 32 studies exploring depression, anxiety, stress, and quality of life in this population and determined that DMHIs show strong evidence for improving socioemotional outcomes, but these effects are relatively short-lived. However, they note that the most effective interventions often included refresher/follow-up content, goal setting, and relapse prevention. At the same time, limited effects were associated with homework completion, self-monitoring, and keeping a diary.

This article underscores the crucial role of self-reflective activities in preserving the effects of DMHIs. The authors' conclusion that content personalization and self-reflective activities are crucial for preserving the effects of DMHIs is particularly significant. It signals an important shift from a 'one-size-fits-all' approach to more individualized mental health care, encouraging active engagement in the process of DMHIs. The study also identifies a critical gap in research regarding the efficacy of

different types of guided DMHIs across diverse demographics and cultural contexts, indicating this is a vital area for future investigation.

P

77. Poissant, H., Mendrek, A., Talbot, N., Khoury, B., & Nolan, J. (2019). Behavioral and cognitive impacts of mindfulness-based interventions on adults with attention-deficit hyperactivity disorder: A systematic review. *Behavioural neurology*, 2019(1), 5682050. <https://doi.org/10.1155/2019/5682050>

Poissant et al. (2019) assess the cognitive and behavioural impacts of mindfulness-based interventions (MBIs) on adults with ADHD. The authors reviewed 13 studies and found that all studies reported improvements in ADHD symptoms following MBIs. Significant improvements were observed in inattention, emotional dysregulation, and executive function, with reductions in ADHD symptoms often maintained at 3- to 6-month follow-ups. The authors note that while MBIs are effective, their impact is moderated by factors such as intervention length and participant characteristics. Additionally, the authors raise concerns about methodological quality and biases, such as high attrition rates and lack of randomization, indicating a need for more rigorous research in the future.

This review underscores the promising potential of MBIs as a supplementary treatment for ADHD, particularly in enhancing inattention and executive function in adults. The findings are in line with previous research that supports the effectiveness of MBIs in reducing ADHD symptoms and emotional dysregulation. The authors stress the need for high-quality studies with better control for biases and methodological rigour, but the potential of MBIs is clear. Future research, which should delve into the specific components of MBIs that contribute to their effectiveness and consider individual differences in ADHD presentation, is crucial. Addressing attrition bias and ensuring proper randomization and control conditions will be pivotal in validating the clinical utility of MBIs for ADHD.

R

- 78. Reangsing, C., Sasinun Punsuwun, M. N. S., & Schneider, J. K. (2021). Effects of mindfulness interventions on depressive symptoms in adolescents: A meta-analysis. *International Journal of Nursing Studies*, 115(10384), 8. <https://doi.org/10.1016/j.ijnurstu.2020.103848>**

Reangsing et al. (2021) assess the effectiveness of mindfulness interventions in reducing depressive symptoms among adolescents. The authors reviewed 29 studies and found a small but statistically significant effect size regarding mindfulness interventions for reducing depressive symptoms in this population. However, they also noted significant heterogeneity across the studies, likely due to differences in study quality, intervention types, and participant characteristics. Additionally, the authors found that factors such as funding and the inclusion of individual counselling positively influenced the effectiveness of the interventions. Despite these promising findings, they emphasize the need for more rigorous research to better understand the long-term effects of mindfulness interventions on adolescent depression.

This study highlights the potential of mindfulness interventions as a complementary treatment approach for managing depressive symptoms in adolescents. For example, the positive influence of individual counselling combined with mindfulness practices indicates that a more tailored approach could enhance the benefits of these interventions. However, the significant heterogeneity and small effect size underscore the importance of conducting higher-quality studies to establish more definitive evidence. Future research should focus on refining intervention protocols and exploring the specific conditions under which mindfulness interventions are most effective for adolescents.

- 79. Requier, F., Demnitz-King, H., Whitfield, T., Klimecki, O., Marchant, N. L., & Collette, F. (2023). The effect of meditation-based interventions on patients with fatigue symptoms: a systematic review and Meta-analysis. *Psychologica Belgica*, 63(1), 64. <https://doi.org/10.5334/pb.1182>**

Requier et al. (2023) consider the impact of mindfulness-based interventions (MBIs) on fatigue in people with various pathological conditions, including cancer and multiple sclerosis, through a systematic review and meta-analysis. The authors reviewed 34 randomized controlled trials (RCTs) and found that MBIs significantly reduced fatigue compared to passive control groups, with a large effect size observed in studies using passive controls. However, no significant differences were found when comparing MBIs to active control groups, possibly due to the benefits of social interactions and support inherent in all types of interventions. The authors also noted that MBIs alleviate fatigue by reducing inflammatory processes and managing secondary symptoms such as pain, anxiety, and depression. Despite the positive outcomes, they emphasized the need for further research to explore the different effects of MBIs on mental versus physical fatigue and the potential impact of social interaction in remotely delivered interventions.

This study highlights the potential of MBIs as an effective non-pharmacological approach to managing fatigue in pathological conditions. The strong effect observed in cancer and multiple sclerosis patients underscores the importance of integrating these practices into standard care plans, especially for conditions where fatigue is a major symptom. However, the lack of significant differences between MBIs and active control groups raises important questions about the role of social support in managing fatigue, suggesting that future interventions consider incorporating interactive elements, even in remote settings. The authors' focus on inflammatory processes as a primary cause of fatigue suggests that MBIs could be broadly applicable in managing fatigue-related symptoms across various conditions, including newer concerns like long-COVID.

80. Ruiz-Íñiguez, R., Santed German, M. A., Burgos-Julián, F. A., Díaz-Silveira, C., & Carralero Montero, A. (2020). Effectiveness of mindfulness-based interventions on anxiety for children and adolescents: A systematic review and meta-analysis. *Early Intervention in Psychiatry*, 14(3), 263-274.
<https://doi.org/10.1111/eip.12849>

Ruiz-Íñiguez et al. (2019) review the effectiveness of mindfulness-based interventions (MBIs) in reducing anxiety among children and adolescents through a systematic review and meta-analysis. The authors compared 18 studies focusing on clinical and non-clinical populations and found that while a select group of individual studies reported significant reductions in anxiety, the overall effect size across all studies was not statistically significant. They noted moderate variability among the studies, which they attributed to differences in sample sizes, types of interventions, and study quality. Despite some promising results in specific subgroups, the authors concluded that the evidence supporting the use of MBIs for reducing anxiety in youth is currently limited and requires further research with larger, more rigorous trials to draw clearer conclusions.

This review highlights the challenges in evaluating the effectiveness of mindfulness-based interventions for anxiety in children and adolescents, especially given the differences in study designs and participant characteristics. While the overall meta-analysis did not show statistically significant results, positive findings in certain studies suggest that MBIs hold potential, particularly in clinical settings. However, the moderate variability seen across studies points to the need for more standardized approaches and larger sample sizes to better understand the impact of these interventions. Future research should aim to address these methodological issues and explore the long-term effects of MBIs on anxiety and other mental health outcomes in young people.

81. Rusch, H. L., Rosario, M., Levison, L. M., Olivera, A., Livingston, W. S., Wu, T., & Gill, J. M. (2019). The effect of mindfulness meditation on sleep quality: a systematic review and meta-analysis of randomized controlled trials. *Annals of the New York Academy of Sciences*, 1445(1), 5-16.
<https://doi.org/10.1111/nyas.13996>

Rusch et al. (2018) analyze the impact of mindfulness meditation interventions on sleep quality in people with clinically significant sleep disturbances. The authors included 18 randomized controlled trials (RCTs) comparing mindfulness meditation to specific active controls, such as evidence-based sleep treatments, and nonspecific active controls. They found moderate evidence that mindfulness meditation significantly improved sleep quality compared to nonspecific active controls at post-intervention and follow-up. However, no significant effect was observed when comparing mindfulness meditation to specific active controls, suggesting that while mindfulness meditation could be beneficial, it may not be more effective than standard sleep treatments. The authors also looked at dose-response relationships and found no significant link between the amount of meditation practice and improved sleep quality.

This meta-analysis highlights the potential role of mindfulness meditation in managing sleep disturbances, particularly as an add-on to existing treatments. The improvement in sleep quality observed with mindfulness compared to controls suggests that it may offer unique benefits in addressing issues that interfere with sleep. However, the authors noted that mindfulness does not outperform established practices like cognitive-behavioural therapy for insomnia (CBT-I), which raises questions about when and how mindfulness meditation is most effective. The lack of a dose-response relationship suggests that practice quality is more important than quantity. Future research should focus on refining mindfulness interventions to make them more effective by combining them with established sleep treatments or tailoring them to specific groups with sleep issues.

S

- 82. Saad, F., Eisenstadt, M., Liverpool, S., Carlsson, C., & Vainieri, I. (2023). Self-Guided Mental Health Apps Targeting Racial and Ethnic Minority Groups: Scoping Review. *JMIR Mental Health*, 10(1), e48991. [doi:10.2196/48991](https://doi.org/10.2196/48991)**

Saad et al. (2023) assess the acceptability and effectiveness of self-guided mental health apps (MHAs) designed for racial and ethnic minorities. The authors reviewed 15 studies focused on CBT-based apps targeting depressive symptoms. While they found that MHAs were generally acceptable, engagement rates declined over time. Only two studies quantitatively assessed the effectiveness of the MHAs, and the results were mixed. The authors observed that barriers to effective MHA use included the repetitiveness of app-based programming, stigma, lack of personalization, and technical issues. They conclude that there is little evidence supporting the effectiveness of MHAs in these populations and emphasize the need for more research to address the specific mental health needs of racial and ethnic minority groups.

This review highlights the growing interest in digital mental health interventions but reiterates significant gaps in the evidence base, particularly regarding their effectiveness among racial and ethnic minority groups. The mixed results and high attrition rates observed suggest that current MHAs may not adequately meet the unique needs of these populations. For example, the lack of personalization and cultural relevance in many apps points to a critical area for improvement in future development efforts. Additionally, the authors emphasize the importance of addressing stigma and other barriers that may prevent sustained engagement with MHAs. Moving forward, it is essential to prioritize including racial and ethnic minority voices in designing and evaluating these interventions to ensure they are both effective and culturally sensitive.

83. Sanchez-Lara, E., Lozano-Ruiz, A., Perez-Garcia, M., & Caracuel, A. (2022). Efficacy of mindfulness-based interventions in cognitive function in the elderly people: a systematic review and meta-analysis. *Aging & Mental Health*, 26(9), 1699-1709. <https://doi.org/10.1080/13607863.2021.1976724>

Sanchez-Lara et al. (2022) evaluate the efficacy of mindfulness-based interventions (MBIs) in improving cognitive function among older adults, including those with mild cognitive impairment (MCI). The authors synthesized data from nine randomized controlled trials and found a null effect of MBIs on cognitive functions, with no significant improvement observed in attention, memory, or executive functions. While the effect sizes for attention and memory were negligible, a small (but non-significant) effect size was detected for executive function. The authors cautioned that the included studies were generally of poor quality, which increases the risk of overinterpreting the results. They concluded that MBIs did not significantly enhance cognitive function in older adults, although MBIs might still be useful as a complementary therapy when combined with other cognitive training interventions.

This meta-analysis highlights the limited efficacy of mindfulness-based interventions in improving cognitive function among older adults, contrasting with earlier research suggesting potential cognitive benefits from mindfulness practice. The null effects found in this study raise important questions about the conditions under which MBIs may be effective for this population. Though not statistically significant, the small effect size observed for executive functions suggests that MBIs have some potential in this area, especially when combined with other cognitive interventions like Goal Management Training (GMT). However, the poor methodological quality of the included studies limits the generalizability of these findings. The authors emphasize that future research should focus on higher-quality studies with larger sample sizes and more rigorous designs to better understand the role of MBIs in cognitive ageing. These findings underscore the need for cautious interpretation and further investigation before MBIs can be recommended as a standard intervention for cognitive decline in older adults.

84. Sari, Y. P., Yu-Yun, H. S. U., & Nguyen, T. T. B. (2023). The Effects of a Mindfulness-Based Intervention on Mental Health Outcomes in Pregnant Woman: A Systematic Review and Meta-Analysis. *Journal of Nursing Research*, 31(6), e306. <https://doi.org/10.1097/jnr.0000000000000586>

Sari et al. (2023) evaluate the impact of mindfulness-based interventions (MBIs) on mental health outcomes in pregnant women, focusing on stress, anxiety, and depression. The authors analyzed 13 studies and found that MBIs were generally effective in reducing stress and anxiety among pregnant women. However, the authors noted the interventions did not show a significant effect on alleviating symptoms of depression. The authors also note there was considerable variation in the types of MBIs, the duration of sessions, and the methods used to measure mental health outcomes between studies, which may have influenced the results. Despite these variations, they support the use of MBIs as a potentially helpful tool for managing stress and anxiety during pregnancy.

This study provides valuable insights into the role of mindfulness-based interventions in managing mental health during pregnancy, particularly in reducing stress and anxiety. The moderate effect sizes for stress and anxiety suggest that MBIs may be beneficial as part of a more comprehensive prenatal care plan, especially for managing the psychological challenges of pregnancy. However, the lack of a significant effect on depression indicates that MBIs may need to be combined with other therapeutic approaches to address depressive symptoms effectively. The authors also emphasize the importance of standardizing intervention protocols and measurement tools to reduce heterogeneity and improve the comparability of future research. Given the high levels of stress and anxiety often experienced during pregnancy, the potential for MBIs to offer non-pharmacological relief is promising, but further research is needed to refine these interventions and better understand their impact on different mental health outcomes.

85. Schultchen, D., Terhorst, Y., Holderied, T., Stach, M., Messner, E. M., Baumeister, H., & Sander, L. B. (2021). Stay present with your phone: a systematic review and standardized rating of mindfulness apps in European app stores. *International Journal of Behavioral Medicine*, 28, 552-560. <https://doi.org/10.1007/s12529-020-09944-y>

Schultchen et al. (2021) evaluate the quality and effectiveness of mindfulness apps available in European app stores through a systematic review and standardized rating. The authors assessed 192 apps using the Mobile Application Rating Scale (MARS) to evaluate engagement, functionality, aesthetics, and information quality. They found that most apps were of moderate quality and had significant concerns about data security, privacy features, and a lack of scientific validation. The authors note that only a small percentage of apps were tested in randomized controlled trials, and many lacked essential privacy policies, posing potential user risks. They also highlight the need for better quality control and standardization in developing mindfulness apps, particularly in ensuring they provide accurate information and secure user data.

This review highlights the challenges users and healthcare providers face in identifying high-quality mindfulness apps in a crowded market. The moderate quality ratings and widespread privacy and data security issues raise significant concerns, particularly given society's growing reliance on digital health tools. The lack of scientific validation for most apps further complicates the issue, suggesting that many available options may not deliver the intended benefits. The authors emphasize the importance of developing more rigorous standards and independent evaluation platforms to help users make informed choices when selecting health-based apps. For healthcare providers, these findings highlight the need for caution when recommending mindfulness apps, ensuring that the tools are both effective and secure.

86. Shabani, F., Montazeri, M., Abdolalipour, S., & Mirghafourvand, M. (2022). The effect of mindfulness training on stress and sleep quality of postmenopausal women: A systematic review and meta-analysis. *Post Reproductive Health*, 28(4), 223-236.

<https://doi.org/10.1177/20533691221140191>

Shabani et al. (2022) evaluate the effect of mindfulness training on stress and sleep quality in postmenopausal women. The authors reviewed five studies and found that mindfulness training significantly improved sleep quality and reduced perceived stress among postmenopausal women. However, they noted that the quality of evidence was low due to the small number of studies and methodological limitations, such as high attrition rates and potential biases in study design. The authors conclude that while mindfulness training may benefit this population, further high-quality research is needed to confirm its effectiveness.

This study adds to the growing body of evidence supporting mindfulness training as a non-pharmacological approach to improving mental health outcomes in postmenopausal women. The significant improvements in sleep quality and stress reduction highlight the potential benefits of integrating mindfulness practices into standard care for managing menopausal symptoms. However, the low quality of evidence and high heterogeneity among relevant studies underscore the need for more rigorous research to establish the efficacy of these interventions. The findings suggest that while mindfulness training is promising in this population, healthcare providers should use caution when incorporating it into a broader therapeutic strategy.

87. Scheepers, R. A., Emke, H., Epstein, R. M., & Lombarts, K. M. (2020). The impact of mindfulness-based interventions on doctors' well-being and performance: A systematic review. *Medical education*, 54(2), 138-149.

<https://doi.org/10.1111/medu.14020>

Scheepers et al. (2019) evaluate the impact of mindfulness-based interventions (MBIs) on doctors' well-being and performance. The authors reviewed 24 studies and found

that MBIs generally had a positive effect on doctors' well-being, particularly in reducing burnout, stress, and anxiety and in enhancing occupational satisfaction. Additionally, MBIs improve the interpersonal aspects of doctors' performance, such as empathy towards patients. However, the evidence was limited by the use of self-reported outcomes and the lack of placebo controls in many studies. The authors highlight the potential benefit of incorporating MBIs into professional development programs for doctors but emphasize the need for more rigorous research to support their standardization.

This review suggests that MBIs improve doctors' well-being and professional performance. However, limiting factors of the analyzed studies, such as self-selection bias and the absence of placebo controls, suggest that the current evidence should be interpreted cautiously. These findings generally support the inclusion of MBIs as a voluntary component of professional development, especially for doctors experiencing high-stress levels. However, the authors call for more robust research to determine the most effective ways to implement these interventions in complex and dynamic medical settings. Future studies should address the methodological weaknesses identified in this review to provide stronger evidence for the widespread adoption of MBIs in medical education and practice.

88. Simpson, R., Simpson, S., Wasilewski, M., Mercer, S., & Lawrence, M. (2022).

Mindfulness-based interventions for people with multiple sclerosis: a systematic review and meta-aggregation of qualitative research studies.

***Disability and Rehabilitation*, 44(21), 6179-6193.**

<https://doi.org/10.1080/09638288.2021.1964622>

Simpson et al. (2022) explore the experiences of people with multiple sclerosis (MS) who participated in mindfulness-based interventions (MBIs). The authors synthesized findings from six studies, highlighting four key themes: accessing mindfulness, a sense of belonging, experiencing mindfulness, and making mindfulness more relevant and sustainable for people with MS. They found that while MBIs were generally perceived as

beneficial, several barriers were noted, including accessibility challenges and a need for more tailored interventions. The authors emphasized the importance of involving people with MS in designing and delivering MBIs to enhance intervention relevance and effectiveness.

This review shines a light on the unique challenges and benefits of MBIs for people with MS. The strong emphasis on the sense of belonging and community experienced by participants underscores the value of group-based MBIs, which offer more than just individual psychological benefits. However, the identified barriers, such as difficulties in accessing face-to-face sessions and the need for interventions tailored specifically to the needs of people with MS, highlight critical areas for improvement. The authors suggest that future MBIs should consider not only the physical and logistical challenges faced by people with MS but also ensure that the content is directly relevant to their experience. This review offers a pathway for making these interventions more accessible, effective, and sustainable.

89. Stadnyk, A., Casimiro, H. J., & Reis-Pina, P. (2024). Mindfulness on symptom control and quality of life in patients in palliative care: A systematic review. *American Journal of Hospice and Palliative Medicine*®, 41(6), 706-714. <https://doi.org/10.1177/10499091231190879>

Stadnyk et al. (2023) assess the effectiveness of mindfulness-based interventions (MBIs) on symptom control and quality of life in patients receiving palliative care. The authors reviewed eight studies and found that MBIs were beneficial in managing symptoms such as anxiety, depression, and suffering, as well as improving spiritual well-being. However, they noted significant variability in the quality of the included research, highlighting issues related to small sample sizes, lack of blinding, and heterogeneous study outcomes. The authors emphasized that while MBIs show promise in palliative care settings, more rigorous studies are needed to confirm these benefits and to better understand possible long-term effects.

This review highlights the potential of mindfulness-based interventions as a supportive care strategy in palliative settings, particularly in alleviating psychological and spiritual distress among people who are terminally ill. The reported improvements in anxiety, depression, and spiritual well-being are encouraging, suggesting that MBIs may play a valuable role in enhancing the quality of life for both patients and their caregivers. However, limitations such as methodological weaknesses and inconsistent outcomes underscore the need for more high-quality research to establish the effectiveness of MBIs in this population. Future studies should focus on larger, well-designed trials that can provide more definitive evidence, particularly regarding the long-term benefits of mindfulness practices in palliative care.

90. Sylvia, A. M., Jastrowski Mano, K., Birkley, E. L., & Mano, Q. R. (2024). Systematic review of dispositional mindfulness and posttraumatic stress disorder symptomology: A targeted examination of avoidance. *Trauma, Violence, & Abuse* <https://doi.org/10.1177/15248380231221278>

Sylvia et al. (2024) conducted a systematic review exploring the relationship between dispositional mindfulness and PTSD symptom clusters, with a specific focus on avoidance symptoms among trauma-exposed adults. The authors reviewed 16 peer-reviewed studies that measured dispositional mindfulness and PTSD symptoms and found that while there is an inverse relationship between dispositional mindfulness and PTSD avoidance symptoms, this relationship was generally weak. The authors also noted that mindfulness had stronger associations with other PTSD symptoms, such as hyperarousal and negative alterations in cognition and mood. They suggest that high levels of avoidance might obscure the benefits of mindfulness in some individuals and that mindfulness could inadvertently reinforce avoidance behaviours in certain cases, highlighting the need for careful clinical assessment before intervention.

This review offers a nuanced perspective on the relationship between mindfulness and PTSD, particularly regarding avoidance behaviours. The weak relationship between mindfulness and avoidance symptoms raises important considerations for the clinical

application of MBIs in trauma populations. While mindfulness shows promise in reducing other PTSD symptoms, its potential to reinforce avoidance behaviours suggests it should be applied with caution, particularly in individuals with high levels of avoidance. The authors emphasize the importance of tailoring mindfulness interventions to the specific needs of PTSD patients, possibly integrating them with more traditional trauma-focused therapies. This review contributes to a deeper understanding of the complexities involved in using mindfulness as a therapeutic tool for PTSD and highlights areas for future research, especially in refining mindfulness practices to better address avoidance symptoms.

91. Sun, S., Goldberg, S. B., Loucks, E. B., & Brewer, J. A. (2022).

Mindfulness-based interventions among people of colour: A systematic review and meta-analysis. *Psychotherapy Research*, 32(3), 277-290.

<https://doi.org/10.1080/10503307.2021.1937369>

Sun et al. (2022) conducted a systematic review and meta-analysis examining the efficacy of mindfulness-based interventions (MBIs) among people of colour (POC) in the United States. The authors reviewed 22 randomized controlled trials (RCTs) and found that MBIs had a small effect on improving psychological outcomes compared to active and inactive controls. The authors noted that MBIs were more effective in reducing psychological symptoms, such as anxiety and depression than in improving overall well-being. Additionally, studies with higher proportions of POC and those conducted in non-clinical populations showed slightly better outcomes. However, the authors noted that the overall effect was smaller than those observed in other populations. They attributed this to structural challenges and the need for interventions to be adapted to complement unique cultures.

This review is significant as it provides the first comprehensive analysis of mindfulness-based interventions' effectiveness for people of colour. The findings suggest that while MBIs can be beneficial in reducing psychological symptoms in POC, the effects are modest and highlight the importance of cultural adaptation in enhancing

the efficacy of these interventions. The small effect size also points to potential barriers, such as systemic inequalities and socio-economic challenges that may limit the overall impact of MBIs. The authors underscore the need for more culturally specific mindfulness practices that address the unique experiences of POC, as well as the importance of further research to explore how these interventions can be optimized for diverse populations. This study contributes to the ongoing conversation about the inclusivity and accessibility of mental health interventions for marginalized communities.

T

92. Tercelli, I., & Ferreira, N. (2019). A systematic review of mindfulness-based interventions for children and young people with ADHD and their parents. *Global Psychiatry*, 2(1), 79-95. <https://doi.org/10.2478/gp-2019-0007>

Tercelli and Ferreira (2019) conduct a systematic review assessing the effectiveness of mindfulness-based interventions (MBIs) for children and young people with ADHD and their parents. The authors reviewed ten studies examining the impact of MBIs on attention, hyperactivity, impulsivity, parental stress, and family functioning and found that MBIs are generally effective in improving attention and reducing parental stress, with some studies also reporting improvements in family functioning. However, the results regarding hyperactivity and impulsivity were inconsistent, with some studies showing positive effects and others showing little to no change. The authors highlighted several methodological limitations, such as small sample sizes, lack of control groups, and reliance on self-report measures, which may have affected the reliability of the findings.

This review highlights the potential benefits of mindfulness-based interventions for children with ADHD and their parents, particularly in improving attention and reducing parental stress. The positive effects on family functioning suggest that MBIs could play a role in enhancing the overall well-being of families affected by ADHD. However, the inconsistent findings regarding hyperactivity and impulsivity indicate more research is needed to determine the specific conditions in which MBIs are most effective for this population. The methodological limitations identified, such as small sample sizes and

lack of control groups, underscore the need for more rigorous studies to strengthen the evidence base. Future research should focus on addressing these limitations and exploring the long-term effects of MBIs on ADHD symptoms and family dynamics.

93. Tudor, K., Maloney, S., Raja, A., Baer, R., Blakemore, S. J., Byford, S., ... & Montero-Marin, J. (2022). Universal mindfulness training in schools for adolescents: a scoping review and conceptual model of Moderators, mediators, and implementation factors. *Prevention Science*, 23(6), 934-953. <https://doi.org/10.1007/s11121-022-01361-9>

Tudor et al. (2022) conduct a comprehensive scoping review examining the mediators, moderators, and implementation factors influencing the outcomes of universal school-based mindfulness training (SBMT) programs for adolescents. The authors analyzed 31 studies, highlighting the growing interest in using SBMT to promote mental health and well-being in schools. They found that while SBMT can have positive effects on reducing symptoms of depression, anxiety, and stress in adolescents, the evidence is mixed regarding who benefits most from these programs and how they exert their effects. The authors identified key factors such as baseline mental health, gender, and school context as potential moderators, while mindfulness skills and executive function were identified as possible mediators of SBMT outcomes. They also proposed a conceptual model to guide future research, emphasizing the need for more rigorous studies to understand the mechanisms and contextual factors contributing to the effectiveness of SBMT in different school settings.

This review offers valuable insights into the complexities of implementing and evaluating mindfulness-based interventions in school settings. The mixed evidence on the effectiveness of SBMT highlights the importance of considering individual differences, such as baseline mental health and gender, as well as broader contextual factors like school environment, when designing and assessing school-based programs. The proposed model offers a useful framework for future research, encouraging a nuanced

exploration of how SBMT works best for diverse populations. However, the authors also emphasize the need for more high-quality studies that incorporate rigorous methodologies and long-term follow-ups to establish clearer evidence of the benefits of SBMT. This study is particularly significant as it addresses gaps in understanding the role of implementation factors and suggests practical ways to enhance the impact of mindfulness training in schools, making it a valuable resource for educators and researchers alike.

V

- 94. Vadvilavičius, T., Varnagiryte, E., Jarašiūnaitė-Fedosejeva, G., & Gustainienė, L. (2023). The effectiveness of Mindfulness-based interventions for police officers' stress reduction: a systematic review. *Journal of police and criminal psychology*, 38(1), 223-239.**
<https://doi.org/10.1007/s11896-022-09570-2>

Vadvilavičius et al. (2023) conduct a systematic review evaluating the effectiveness of mindfulness-based interventions (MBIs) in reducing stress among police officers. The authors reviewed eight studies and found that MBIs were generally effective in reducing stress and related outcomes such as sleep problems, post-traumatic stress disorder (PTSD), and burnout. However, the authors noted significant variability in the quality of the studies, including differences in the types of MBIs used, the duration of interventions, and the methods for measuring stress. The authors conclude that while MBIs show promise as a tool for stress reduction in police officers, more rigorous research is needed to strengthen the evidence base and refine these interventions for this specific population.

This review highlights the potential of mindfulness-based interventions to mitigate stress and improve mental health outcomes among police officers, a group that faces unique and intense occupational stressors. The positive effects observed in reducing stress and related issues like PTSD and burnout underscore the value of integrating MBIs into police training programs. However, the variability in study quality and intervention

methods suggests a need for more standardized approaches and better-designed studies to understand the impact of MBIs in this context fully. The authors emphasize the importance of addressing these methodological gaps and suggest that future research should focus on tailoring MBIs to the specific needs of police officers to maximize their effectiveness.

95. Vinci, C. (2020). Cognitive behavioural and mindfulness-based interventions for smoking cessation: a review of the recent literature. *Current Oncology Reports*, 22, 1-8. <https://doi.org/10.1007/s11912-020-00915-w>

Vinci et al. (2020) conduct a review of recent literature examining the effectiveness of cognitive behavioural therapy (CBT) and mindfulness-based interventions (MBIs) for smoking cessation. The authors note that both CBT and MBIs are effective in helping people stop smoking, particularly in special populations such as those with low socioeconomic status (SES), pregnant women, and people with serious mental illnesses. The review also highlights the developing role of technology in delivering these interventions, which shows promise in increasing accessibility and engagement with CBT and MBI interventions. However, the authors emphasize that while CBT and MBIs are effective, more research is needed to determine which populations benefit most from either intervention.

This review provides a focused examination of smoking cessation interventions, emphasizing the effectiveness of CBT and MBIs across diverse and often underserved populations. The emphasis on mHealth and eHealth innovations reflects the shift towards more accessible, technology-driven approaches to mindfulness-based health interventions. However, the authors also stress the need for further research to better understand the specific contexts in which each intervention is most effective. This study underscores the importance of continued development and evaluation of both CBT and MBIs to maximize their impact on smoking cessation efforts, particularly in vulnerable populations.

W

- 96. Wang, G., Liu, X., & Lei, J. (2023). Effects of mindfulness-based intervention for women with infertility: a systematic review and meta-analysis. *Archives of Women's Mental Health*, 26(2), 245-258.**

<https://doi.org/10.1007/s00737-023-01307-2>

Wang et al. (2023) conduct a systematic review and meta-analysis assessing the effects of mindfulness-based interventions (MBIs) on physical and psychological outcomes in people diagnosed with infertility. The authors reviewed ten randomized controlled trials focusing on health outcomes such as depression, anxiety, stress, and quality of life and found that MBIs significantly reduced symptoms of depression and anxiety and improved overall quality of life in this population. However, the authors noted that MBIs did not significantly impact perceived stress, body mass index (BMI), or certain quality of life domains like bodily pain and mental health. The authors conclude that while MBIs are effective in enhancing mental well-being and certain aspects of quality of life for people with infertility, further high-quality research is needed to confirm these benefits and explore the long-term effects of MBIs in this population.

This review highlights the potential benefit of mindfulness-based interventions for people dealing with both the psychological and physical challenges of infertility. However, the lack of significant effects on perceived stress, BMI, and certain mental health aspects suggests that MBIs may not address all the complex needs of people with infertility. Additionally, the authors underscore the importance of continuing to refine interventions to ensure they are tailored to address the specific needs of this population.

- 97. Wang, T., Tang, C., Jiang, X., Guo, Y., Zhu, S., & Xu, Q. (2024). Effectiveness of Web-Based Mindfulness-Based Interventions for Patients With Cancer: Systematic Review and Meta-Analyses. *Journal of Medical Internet Research*, 26, e47704. <https://doi.org/10.2196/47704>**

Wang et al. (2024) conduct a systematic review and meta-analysis evaluating the effectiveness of web-based mindfulness-based interventions (wMBIs) for people with cancer. The authors reviewed 15 randomized controlled trials and found that wMBIs significantly improved quality of life, sleep, and mental health outcomes (including reductions in anxiety, depression, distress, and perceived stress) among cancer patients. Although the interventions did not significantly impact fear of cancer recurrence or posttraumatic growth, the authors emphasize that while digital interventions show promise, several challenges must be addressed related to their accessibility (particularly in low- and middle-income countries), as well as concerns with service fees and patient mobility for wMBIs to be feasible.

This review provides evidence supporting the use of wMBIs as a viable option for improving mental health and quality of life outcomes in cancer patients. The significant improvements in mental health and sleep underscore the potential of these interventions to offer accessible, non-pharmacological support for cancer patients, particularly for those with limited access to in-person therapies. The authors also highlight accessibility challenges, noting the need for more equitable distribution of digital health resources, especially in underserved communities. Future research should focus on optimizing these interventions for improved accessibility and exploring how they can be integrated into standard cancer care to maximize their benefits.

**98. Winter, F., Steffan, A., Warth, M., Ditzen, B., & Aguilar-Raab, C. (2021).
Mindfulness-based couple interventions: a systematic literature review.
Family Process, 60(3), 694-711. <https://doi.org/10.1111/famp.12683>**

Winter et al. (2021) conduct a systematic review evaluating the effectiveness of mindfulness-based interventions (MBIs) tailored to couples and other close dyads. The authors reviewed 16 studies examining relationship satisfaction, mindfulness, self-compassion, and psychological well-being. They found that MBIs may improve relationship quality, with some studies showing significant increases in relationship satisfaction and emotional closeness. However, the authors note that the effect of MBIs

was inconsistent across all studies. Some outcome variations may relate to whether both partners participated in the intervention or just one.

This review provides an overview of MBIs for couples, highlighting the potential benefit of improving relationship quality and individual well-being. The positive effects on relationship satisfaction and mindfulness underscore the importance of integrating MBIs into couple therapy and relationship counselling. However, inconsistency in outcomes across different studies suggests more research is needed to fully understand the factors that influence the effectiveness of these interventions. The authors emphasize the importance of considering each couple's specific needs and dynamics when implementing MBIs in therapy, as well as the potential advantage of involving both partners in the intervention. This study contributes valuable insights into how mindfulness practices can be adapted to support relationship health but also calls for more rigorous research to establish best practices in this area.

X

99. Xuan, R., Li, X., Qiao, Y., Guo, Q., Liu, X., Deng, W., ... & Zhang, L. (2020).

Mindfulness-based cognitive therapy for bipolar disorder: A systematic review and meta-analysis. *Psychiatry Research*, 290, 113116.

<https://doi.org/10.1016/j.psychres.2020.113116>

Xuan et al. (2020) conduct a systematic review and meta-analysis exploring the efficacy of mindfulness-based cognitive therapy (MBCT) for people with bipolar disorder (BD). The authors reviewed ten studies examining the impact of MBCTs on BD symptoms, including depression, anxiety, mania, stress, and emotional regulation, and found that MBCTs were effective in reducing depressive and anxiety symptoms for up to three months post-intervention, although these effects diminished by twelve months. No effect was found for the symptoms of mania. While the positive effects of MBCTs are short-lived for people with BD, there is still therapeutic benefit in relieving symptoms, even for a short duration, as it may assist people in accessing other tools and strategies that have a long-term impact on their symptom management plan. The authors note that

the negligible impact of MBCTs on mania highlights the complexity of treating BD. Their nuanced discussion of the long-term efficacy and variability in outcomes across studies provides a balanced view of MBCT's role in managing BD and echoes past studies emphasizing the importance of individualized treatment plans.

100. Xunlin, N. G., Lau, Y., & Klainin-Yobas, P. (2020). The effectiveness of mindfulness-based interventions among cancer patients and survivors: a systematic review and meta-analysis. *Supportive Care in Cancer*, 28, 1563-1578. <https://doi.org/10.1007/s00520-019-05219-9>

Xunlin et al. (2019) conduct a systematic review and meta-analysis assessing the effectiveness of mindfulness-based interventions (MBIs) in improving anxiety, depression, fatigue, and stress in people with cancer and cancer survivors. The authors reviewed 29 randomized controlled trials (RCTs) and found that MBIs significantly improved all symptoms of interest. Among the MBIs evaluated, mindfulness-based art therapy (MBAT) shows the strongest effects on reducing anxiety and depression, followed by mindfulness-based stress reduction (MBSR) and mindfulness-based care recovery (MBCR). The review concludes that MBIs might be effective as an adjunct therapy for managing cancer-related symptoms across different types of cancer.

This review highlights the significant benefits of MBIs in improving psychological and physical well-being among cancer patients and survivors. The notable effects observed across participants underscore the importance of integrating MBIs into standard cancer care plans. The particularly strong impact of mindfulness-based art therapy suggests that creative expression through art may offer additional therapeutic benefits for those struggling with cancer-related distress. However, variability across MBIs echoes previous studies calling for individualized approaches tailored to each person's unique needs.

Y

- 101. Yeun, Y. R., & Kim, S. D. (2022). Psychological effects of online-based mindfulness programs during the COVID-19 pandemic: A systematic review of randomized controlled trials. *International journal of environmental research and public health*, 19(3), 1624.**
<https://pubmed.ncbi.nlm.nih.gov/35162646/>

Yeun and Kim (2022) investigate the psychological impact of online-based mindfulness programs during the COVID-19 pandemic. The authors reviewed six randomized controlled trials (RCTs) and found that online-based mindfulness interventions may have a positive effect on reducing anxiety, depression, and stress in both clinical and general populations during the quarantine period. However, despite these positive findings, the authors reiterate the need for standardized online protocols and more rigorous research methodologies to provide consistent and reliable results in this area.

Interestingly, this is one of the first studies reviewed to recommend mindfulness-based interventions (MBIs) as a complementary or supplemental intervention to traditional Western treatments for stress, anxiety, and depression. Echoing other recent studies, the authors emphasize the importance of utilizing available technology to create personalized care for groups with diverse needs. They also stress the need for continued research across different populations and cultural contexts to understand the efficacy and applicability of these interventions fully.

Z

- 102. Zhang, Z., Chang, X., Zhang, W., Yang, S., & Zhao, G. (2023). The effect of meditation-based mind-body interventions on symptoms and executive function in people with ADHD: a meta-analysis of randomized controlled**

trials. *Journal of Attention Disorders*, 27(6), 583-597.

<https://doi.org/10.1177/10870547231154897>

Zhang et al. (2023) review the effect of mindfulness-based interventions (MBIs) in people with ADHD. The authors reviewed 19 randomized controlled trials (RCTs) involving both children/adolescents and adults and found that MBIs had a small but significant effect on reducing inattention and hyperactivity/impulsivity while also improving executive function. Interestingly, the authors noted that MBIs showed a more pronounced improvement in inattention for adults, while children and adolescents saw greater improvement in hyperactivity and impulsivity. Additionally, they found that interventions lasting over 1,000 minutes were most beneficial for improving inattention, while shorter interventions were more impactful for symptoms of hyperactivity and impulsivity. This aligns with previous studies demonstrating that shorter interventions (less than eight weeks and with shorter session durations) may be more beneficial for children—especially young children. The authors conclude that MBIs could serve as a complementary or alternative therapy for managing ADHD symptoms, particularly given their safety and accessibility compared to traditional medications.

This meta-analysis provides insight into the potential of MBIs as a therapy for people with ADHD, particularly in addressing inattention, hyperactivity, and impulsivity. The authors echo previous studies highlighting the importance of tailoring MBIs to the developmental needs and abilities of the population receiving the intervention, emphasizing the difference in effect size between inattention and hyperactivity/impulsivity based on age. The authors also emphasize that intervention duration is a crucial variable, as longer-term practices yield better results for some symptoms but not others. However, the positive effects of longer-duration interventions may also relate to developmental status. Based on their analysis, the authors suggest that more research is needed to tailor these interventions to sub-groups within the ADHD population. This study contributes to the growing body of evidence supporting MBIs in ADHD management and underscores the need for further exploration of how these practices can be integrated into broader treatment plans.

- 103. Zhang, B., Fu, W., Guo, Y., Chen, Y., Jiang, C., Li, X., & He, K. (2022). Effectiveness of mindfulness-based cognitive therapy against suicidal ideation in patients with depression: A systematic review and meta-analysis. *Journal of Affective Disorders*, 319, 655-662. <https://doi.org/10.1016/j.jad.2022.09.091>**

Zhang et al. (2022) conduct a systematic review and meta-analysis evaluating the effectiveness of mindfulness-based cognitive therapy (MBCT) in reducing suicidal ideation in people with depression. The authors reviewed seven randomized controlled trials (RCTs) and determined that MBCT had a significant effect on reducing both suicidal ideation and depressive symptoms compared to treatment as usual (TAU). However, the authors noted a high heterogeneity among the included studies, particularly between those conducted in China and Western countries. Despite these differences, the authors believe the overall findings support the use of MBCT as an effective intervention for managing suicidal ideation in patients with depression, especially when combined with conventional treatments.

This study contributes to the growing body of evidence supporting MBIs as a valuable component of mental health treatment plans, particularly for people experiencing depression and suicidal ideation. The authors' emphasis on MBCT's effectiveness in reducing suicidal ideation aligns with previous research on the broader benefits of mindfulness practices in mental health care. However, the significant heterogeneity between studies, especially those from different regions, underscores the need for further research to standardize treatment protocols and improve the generalizability of these findings. Notably, this study is among the first to highlight the importance of considering cultural and clinical differences when applying mindfulness-based therapies across diverse populations. Future research should optimize MBCT protocols to improve their effectiveness and explore how these interventions can be tailored to meet the specific needs of various populations, particularly in underrepresented regions.

104. Zhou, X., Guo, J., Lu, G., Chen, C., Xie, Z., Liu, J., & Zhang, C. (2020). Effects of mindfulness-based stress reduction on anxiety symptoms in young people: A systematic review and meta-analysis. *Psychiatry Research*, 289, 113002. <https://doi.org/10.1016/j.psychres.2020.113002>

Zhou et al. (2020) complete a systematic review and meta-analysis assessing the effectiveness of mindfulness-based stress reduction (MBSR) in reducing anxiety symptoms in young people. The authors reviewed 14 randomized controlled trials (ages 12 to 25 years old) and found that MBSRs significantly reduced anxiety symptoms compared to control conditions. The authors also found that shorter MBSR interventions (less than eight weeks) were particularly effective, while longer interventions did not have a strong impact. They also noted that the positive effects of MBSRs were consistent across various populations, although the quality of some studies varied, which impacted the overall generalizability of the results.

This systematic review provides important evidence supporting the use of MBSRs as a tool for alleviating anxiety in adolescents and young adults. The significant effects observed suggest that MBSRs could be a valuable component of future mental health strategies for young people. However, variability in study quality and the reduced effectiveness of longer interventions indicate that more research is needed to understand this population's optimal duration and delivery methods of MBSRs. This study contributes to the growing body of literature advocating for mindfulness-based interventions in this population but also highlights the need for more rigorous, high-quality trials to fully validate these findings.

THE END